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OBSERVATIONS ON A NEW METHOD OF CANALIZING STRICTURES OF THE OESOPHAGUS

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A great deal has been written about the treatment of oesophageal strictures. It is, therefore, not my intention to review the methods in use today or to assess the end-results obtained with different methods of treatment. Different clinics still have their individual preferences, which makes it clear that no single method appears to be entirely satisfactory. During the past two years a new procedure has been attempted for the treatment of cases with both benign and malignant strictures admitted to our wards. This procedure is briefly described in this paper.

Benign Strictures

The commonest cause of benign strictures of the oesophagus is ingestion of corrosive substances. The prevalence of this condition in South Africa and the relevant problems of treatment have been most adequately stressed by Marchand. Every worker in the field of corrosive strictures of the oesophagus has had to face the problem of tragedy in accidental cases. Moreover, a heavy demand is placed on the surgeon, the anaesthetist, the relatives and on the accommodating institution alike, by the inevitably long-drawn-out process of treatment. It is the distressing picture of the mature, established, and often impermeable stricture which has stimulated this new approach.

Established strictures have been approached universally with the bougie, and most authorities still agree that, at this stage, conservative dilatation should be attempted in all cases, in spite of the accessibility of the stricture to modern surgery. All endoscopists undertaking this treatment have been pleased to find a lumen in the bad stricture, whether by retrograde bouginage by the Iglauer method, by anterograde filiform bouginage, or by the swallowing of thread; but they have been as disappointed at the subsequent endoscopy by the elusiveness of the tiny lumen. It has been equally disappointing to find, in a stricture with a reasonable lumen, that the maximal dilatation achieved at the previous session has not been maintained.

Attempts have been made in Scandinavia to maintain the lumen by permanent canalization with a rubber feeding tube introduced through a lateral pharyngotomy. This procedure was, however, not continued for obvious reasons.

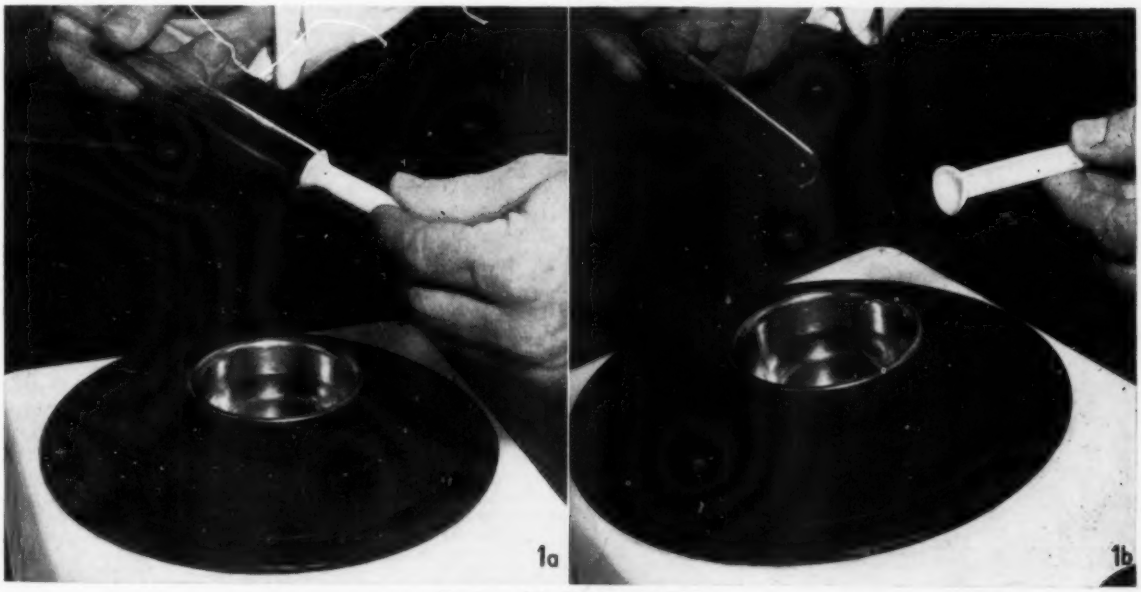
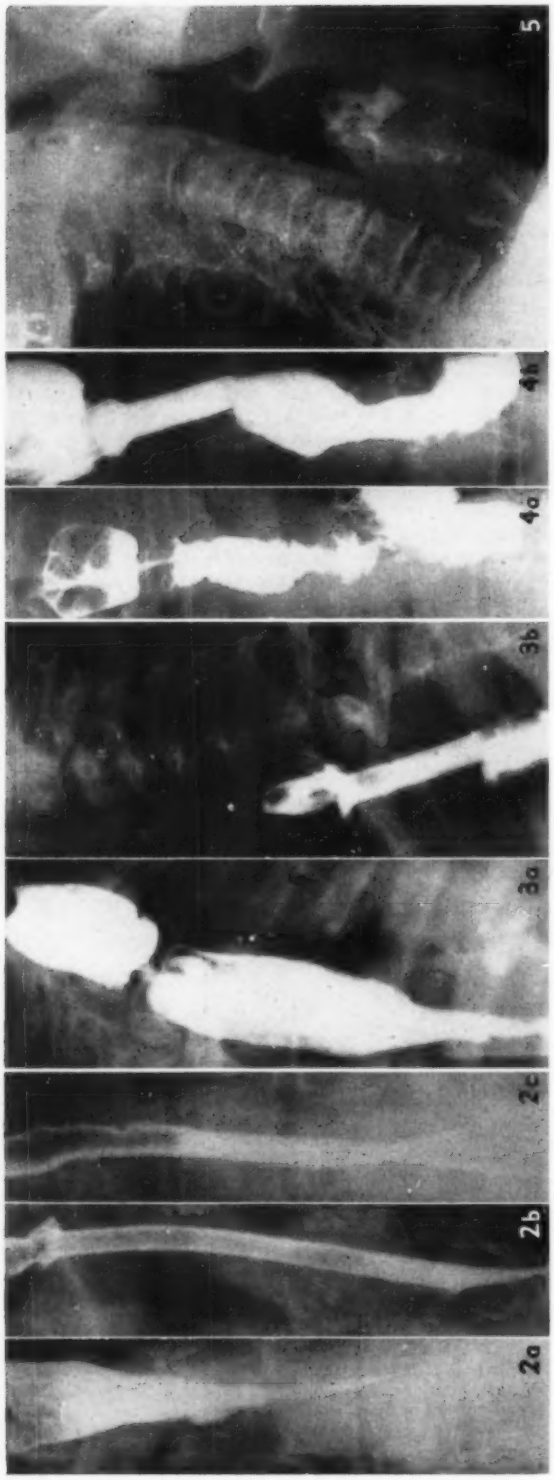


Fig. 1*a* and *b*. Making the FPT.



A number of cases are described here to show the results obtained with permanent canalization by means of a flanged portex tube (FPT) made out of ordinary endotracheal tubes (without the knowledge of the Anaesthetic Department !).

MAKING THE FPT

The end of an ordinary endotracheal portex tube is heated in glycerine at a temperature of 200 - 215°F. Simultaneously, the bottom of a glass test-tube, of a size according to the flange required, is heated for a few seconds in the same container. The portex tube and the test-tube are then both quickly removed from the glycerine and the bottom of the test-tube is immediately transferred to the open heated-end of the portex tube which is then, by slight pressure of the test-tube, moulded to the required size. Within 10 - 20 seconds the test-tube and the portex have cooled (they may be separated under running water) and when the test-tube is removed, the flange on the portex tube is maintained. This flange will remain even after boiling.

The prepared tube may then be cut to the desired length with scissors before or during the endoscopy. The tubes used in this series were all made in a gallipot on a hot-plate in the tea-room outside the theatre, quite quickly and simply (Figs. 1*a* and *b*). Repeated boiling tends to soften portex and this is overcome, if necessary, by soaking the tube, or part of it, in commercial ether for a period of 5 - 7 minutes, and then leaving it to dry for 36 hours. Soaking for longer periods can make the tube absolutely rigid. Many of the flanges, and some of the smaller sized tubes used in this series, were made firm by soaking them in ether for 6 minutes. Tubes used for carcinomatous strictures were soaked slightly longer.

Method of Insertion

In this series the Negus oesophagoscopes were used as a routine. For the smaller tubes the standard adult-sized oesophagoscope or speculum was used, but for larger tubes the Instrument oesophagoscope is necessary. The latter instrument was to be the one of choice if it could be easily passed. After maximal dilatation of the stricture a tube of corresponding size was pushed into position on a guide bougie with the aid of a home-made ring introducer, in the usual manner.

CASE REPORTS

Case 1

A 30-year-old male was admitted on 15 October 1958, 2 months after intentional swallowing of caustic soda. He was able to swallow only fluids with difficulty. A barium swallow revealed a long mid-oesophageal stricture. Oesophagoscopy showed the upper end of a mature circumferential stricture at the level of 24 centimetres, admitting a no. 6 bougie. The stricture was dilated with difficulty to no. 18 but there was no bleeding. An equivalent sized FPT was inserted through the stricture and left *in situ*. Thereafter swallowing was effortless for fluids and a light diet, and the patient was not aware of the foreign body in the oesophagus. During the following 3 months repeated dilatations and insertions of FPTs were carried out, the longest period of permanent canalization being 2 weeks, with no reaction, and the original maximal lumen was maintained. At this stage the patient, who is emotionally unstable, became very difficult and, after a few bouts of heavy alcoholism, insisted on leaving. It was decided to replace a FPT and to allow him to go home. He was discharged on 2 January 1959, 3½ months after admission. He returned as instructed one month later complaining that swallowing had become more difficult

Fig. 2. Case 1: (*a*) On admission, (*b*) FPT *in situ*, and (*c*) 9 months later.
Fig. 3. Case 2: (*a*) Stricture, and (*b*) FPT *in situ*.
Fig. 4. Case 4: (*a*) Stricture, and (*b*) FPT *in situ* after 6 weeks.
Fig. 5. Case 5: FPT in position in cervical oesophagus.

during the last week. On oesophagoscopy on 3 February 1959, the tube could not be found and the stricture appeared free from reaction. Dilatation was easy, but with no. 14 slight bleeding occurred and larger bougies were not used. The same happened a week later, and by the following week swallowing had again become difficult—even swallowing fluids.

A barium swallow showed a long mid-oesophageal stricture which closely resembled those seen in the original studies. Again the patient became difficult and demanded the re-insertion of a tube and discharge. After much deliberation a no. 14 FPT was replaced on 25 February 1959, whereupon he again swallowed satisfactorily and he was allowed to go home. He returned on 8 April 1959 swallowing well and looking a different person. On oesophagoscopy the appearance of the stricture was good but no FPT was seen. (This was the third tube he had swallowed, all of which were passed *per rectum* unnoticed.) Amazingly enough, dilatation to no. 18 was now uneventful and, as this dilatation was easily maintained at subsequent sessions, he was taught self-dilatation and discharged. He was last seen in September 1959, when he was still swallowing well (Figs. 2*a*, *b* and *c*).

Case 2

A 2-year-old child was admitted in 1955, 2 months after she had accidentially swallowed caustic soda. There was a mature circumferential stricture 3 cm. below the crico-pharyngeus. During repeated attempts to find a lumen the oesophagus was perforated. After recovery a gastrostomy was performed and she was sent home to return when 4 years old for reconstructive surgery.

She returned on 26 February 1958, when a lumen was found with urethral filiforms and the stricture dilated to no. 5. After repeated dilatations during the next 8 months a dilatation up to no. 17 was achieved. This could, however, not be maintained for more than 2 weeks, when she repeatedly reverted to a no. 7. There was a gradual deterioration and on 15 January 1959 the stricture could only be dilated to a no. 12. A size 12 FPT was inserted and left *in situ* for 1 month when it was removed. No signs of irritation were seen. A week later a size 14 FPT was inserted and she was again discharged for 1 month. This was removed on 25 March 1959 and again no reaction was seen. Unfortunately at this stage she developed chicken pox and was not seen for a month. However, on 22 April 1959 dilatation up to a no. 14 was easily achieved without bleeding, but during May and June the stricture again deteriorated until in July it could only be dilated to no. 9. This was a distressing result after so much promise and it was decided that she should undergo reconstructive surgery as originally planned (Figs. 3*a* and *b*).

Case 3

A 6-year-old child was admitted on 19 April 1958, 3 weeks after she had accidentally swallowed caustic soda. She was able to take only fluids with difficulty. A mature fibrous circumferential stricture was found at the level of 22 centimetres admitting a no. 7 dilator. The stricture was dilated to no. 20. During the next 6 months repeated dilatations were very unsatisfactory and maximal dilatation actually deteriorated to a no. 13.

On 21 November 1958 a forcible dilatation was made to no. 14 and FPT inserted. She swallowed and tolerated the tube well and was discharged for a month. On 19 Desember 1958 the FPT was removed but there was marked reaction and bleeding at the stricture site. Swallowing, however, remained satisfactory and test dilatations to no. 14 were maintained without effort or bleeding. On 30 January 1959 she was discharged on a full diet, and on 13 February 1959 the stricture appeared healed and was again easily dilated to no. 14. She returned on 4 June, 1959 with the FPT obstructed by a button, but dilation was again effortless. It is felt that further dilatations may not be necessary.

Case 4

An 18-year-old boy was admitted on 24 November 1957, 3 months after a Mes operation was performed for a long corrosive stricture. An S-shaped anastomotic stricture was found and repeated dilatations were instituted without progress over a period of 1 year.

On 20 October 1958 the stricture was dilated to no. 18 and a FPT inserted. In spite of the tube being so near the larynx, it was well tolerated and swallowing was very satisfactory. Two weeks later there was no mucosal reaction and a new FPT was inserted. After a further 2 weeks there was still no reaction and the stricture was dilated to a no. 22 and another FPT inserted. This was left *in situ* for 1 month when a slight reaction was noticed and the stricture was rested for a week. A new FPT was then inserted and the patient was discharged to the country on an almost full diet. He returned a month later after again having noticed slight difficulty in swallowing during the previous week. No tube was found in the stricture which had regressed and would now only dilate up to a no. 16. This regression was quite definite, and was disappointing after 3 months of permanent canalization. It was felt that the marked tortuosity of this S-shaped stricture was perhaps responsible for the failure. The patient was referred for plastic surgery to the anastomotic site. This has been unsuccessful and he now has a stricture which dilated to a no. 12 (Figs. 4*a* and *b*).

After failure of direct surgery to the stricture, this case again presented in a very unsatisfactory condition. Repeated dilatations were attempted, but a no. 12 could not be maintained for more than 2 weeks. Dilatation to no. 14 was then carried out and a FPT was again inserted for 5 weeks. There was no reaction and canalization was uneventful. Since the removal of the FPT the stricture can be dilated readily to no. 15; this has been well maintained for 2 months. A barium swallow showed no hold up, and the patient has been discharged, swallowing well. It is felt that no further dilatations are necessary—a highly satisfactory result in a difficult case.

Case 5

This was an elderly lady of 74 who had had a postcricoid carcinoma successfully treated by the Radiotherapy Department in 1953. However, shortly after the treatment she developed an impermeable cricopharyngeal cicatricial stricture. She had to lead a 'gastrostomy life' since that time as repeated examinations had revealed no recurrence but also no lumen. On 15 February 1959 retrograde dilatation was successful and it was possible to pull a Ryle's tube through the structure. A week later anterograde forced dilatation to no. 7 was done and a FPT inserted. Again, in this case, the flange was only just below the arytenoids but was well tolerated, and she readily took mashed solids and bread by mouth—for the first time in 4 years. After 2 weeks, there having been no reaction, a forced dilatation to no. 18 was done and a new FPT inserted. She was discharged on a full diet. A month later no tube was found, there was still no reaction, and an ambitious dilatation to no. 19 was done with re-insertion of a FPT. Some discomfort now occurred but, as this appeared to settle, she was again discharged. She returned 3 weeks later not swallowing too well and complaining of pain in the neck and of hoarseness. Indirect laryngoscopy showed a left recurrent palsy and, on oesophagoscopy, the flange was seen to have passed into the stricture and the tube could only be moved by pushing it through into the stomach. There was a fairly marked mucosal reaction but no evidence of recurrence of the original growth. Although we confidently expected the recurrent nerve to recover, it was considered inadvisable to continue dilatations and the stricture subsequently regressed to the extent of dysphagia even for liquids. She has reverted to gastrostomy feeding (Fig. 5).

Case 6

A 2-year-old child was admitted with a mature fibrous circumferential stricture 4 cm. below the cricopharyngeus following accidental ingestion of caustic soda. Dilatations performed elsewhere had failed and the child was referred for consideration of reconstructive surgery. Fortnightly dilatations showed no improvement over a period of 3 months and on 11 February 1959 a dilatation from no. 6 to no. 15 was done and a FPT inserted. This was well tolerated and the child was discharged able to swallow well. On 11 March 1959 the tube was removed and a gross reaction with bleeding granulation tissue was found. This was not particularly disturbing in the light of our experience in Case 3, but unfortunately this stricture subsequently regressed, dilating only to a no. 11 in June. Repeated dilatations have again been instituted, and in September a dilatation up to a no. 14 was effected.

Routine Care

All cases with benign strictures canalized with a FPT were put on penicillin and streptomycin systemically for 3 days after insertion, and on hibitane lozenges 2 hourly. In addition, as long as the tube was *in situ*, 100 mg. of ascorbic acid and amphogel were given 3 times daily after meals. Barium swallow, X-ray of the chest, and sedimentation rate investiga-

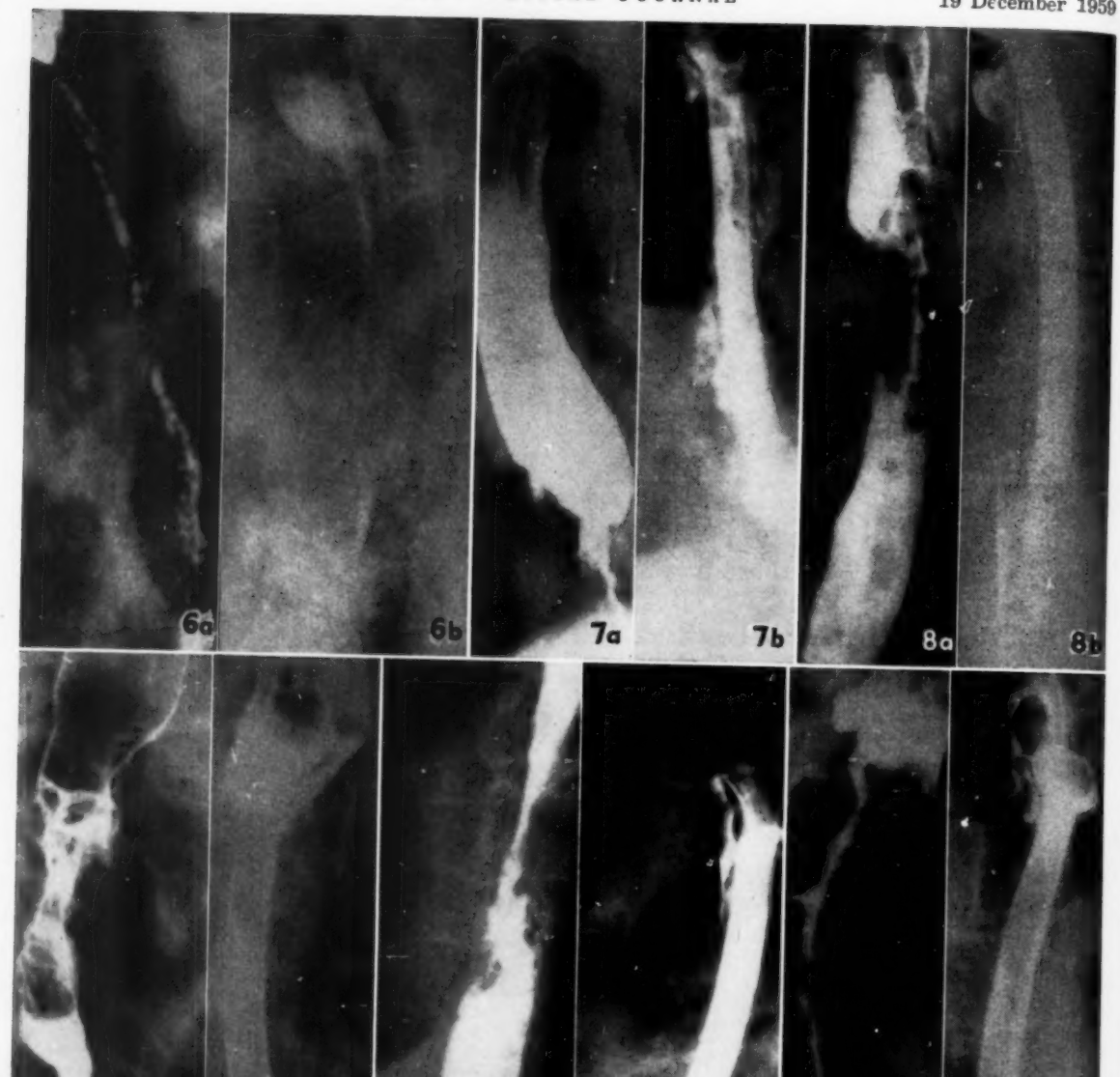


Fig. 6. Case 7: (*a*) The malignant stricture, and (*b*) the FPT *in situ*. *Figs.* 7-11. Each figure shows (*a*) the malignant stricture, and (*b*) the FPT *in situ*.

tions were carried out as a routine in the beginning of the series.

Diet depended entirely on the cooperation and intelligence of the patient, but in hospital all the above cases were on a full puréed diet, with the exception of meat and fish in any form.

Fate of the Tube in the Oesophagus

Patients were generally unaware of tubes in the oesophagus, though Case 5 appeared to know whether a tube had been left *in situ* or not. Even by palpation, in Case 4, after the tube had been *in situ* for 6 weeks, it was not possible to decide clinically whether the tube was still present or not.

All tubes removed after one month had an unpleasant smell and, although the lumen was clean, the flange was invariably covered with adherent debris which was responsible for the odour. After about 2 weeks in the oesophagus, portex changes colour, becoming fairly black and mottled after a month. Proportionately with this colour change portex becomes slightly harder. In the early stages of this investigation a tube was regurgitated into the pharynx by Case 1 and some tubes were passed into the stomach, but on all occasions faulty insertion, or insertion of too small a tube, had been suspected. Slipping of the tubes through the stricture was distinctly unusual and, when this happened, their passage through the alimentary canal was readily traced by X-ray. Case 1 passed 3 tubes unnoticed, one of which was a size 14 and 12 cm. long. The only case in which there was a hold-up of the tubes was in Case 5, an elderly subject who had had a gastrostomy for years. These tubes, only one of which had slipped through on its own, were held up in the stomach for several months and removed at her final gastrostomy. They were black and hard, but no abnormality was present in the stomach.

Only on two occasions were tubes obstructed by food—then only partially, and on each occasion firm long fibrous strands were removed from the flange extending into the lumen. These tubes were both size 14, the smallest that allowed a normal diet in this series, although Case 1 survived a month on a size 12 without obstruction.

Endoscopic removal of the tubes, grasping forceps being used, was at all times simple and uneventful.

CONCLUSIONS

In this series we have only been concerned with mature stricturing. Although no definite staging was attempted, these were all circumferential strictures not maintaining dilatations and greater emphasis was placed on the dilator admitted rather than the dilatation achieved. It would have been interesting to compare these cases with similar cases who, in the past, have had to receive repeated dilatations over a period of years, but unfortunately the series is too small. The need for endoscopy and hospitalization was considerably reduced in the 2 successful cases in this series (Cases 1 and 3), but the unsatisfactory reactions in the other cases regrettably precluded any further studies.

The reason for the big variation in the mucosal reactions is not completely clear, but 3 factors come to mind. (1) Portex is not completely non-irritant, (2) the collection and putrefaction of food debris under the flange, and (3) in order to achieve a maximal serviceable lumen with the initial FPT many of the dilatations were forced above the limits which one would normally have regarded as being reasonable.

Further work is necessary with non-irritant materials, of which many, such as silastic, are now becoming available.

It seems certain that permanent canalization of the strictured oesophagus may be possible, and this might open the field for skin and perhaps vein grafts. There can, however, be no doubt that, at present, portex is entirely suitable for maintaning the tiny lumen for short periods to facilitate the next dilatation and, in the meantime, for maintaining a reasonable food intake. The flanged portex tube described will, in certain cases of stricture, obviate the necessity for gastrostomy, which will also ensure a clear upper abdominal field for reconstruction by a surgeon.

Malignant Strictures

The effects of starvation and thirst on the patient with an inoperable carcinomatous stricture of the oesophagus must have been foremost in the mind of Souttar when he developed his metal tube over 25 years ago. This problem is perhaps particularly important in South Africa where carcinomatous stricture of the oesophagus occurs predominantly among the more primitive races, who cannot understand or manage a gastrostomy.

Souttar's tube has stood the test of time without opposition. The Symonds' tube offered a very poor challenge, and it is in this field in particular that the FPT excels.

The following case is presented to illustrate the advantages to be derived from the use of the FPT.

Case 7

An 86-year-old male was admitted on 10 October 1958 with a history of progressive dysphagia for 9 months followed by sudden complete obstruction. Oesophagoscopy showed a carcinoma with complete obstruction at the level of 25 centimetres. After dilatation to no. 16 a FPT was inserted. On biopsy a poorly differentiated keratinizing squamous carcinoma was diagnosed. Bronchoscopy was normal. Swallowing was entirely satisfactory after the insertion of the FPT and remained so until the patient died of general manifestations in July 1959 (Figs. 6*a* and *b*).

Radiographs only of the other cases are presented (Figs. 7-11).

The advantages of the FPT are summarized in Table I.

TABLE I. ADVANTAGES OF THE FPT

	Souttar	*FPT*
1. Availability	Imported—not always available	Available in any theatre
2. Length and size	Restricted	Any measurement
3. Site	Not any part of oesophagus	Any part
4. Reaction	Mucosal more marked, may not be tolerated	Mucosal less marked, unnoticed by patient
5. Weight	Heavy	Light
6. Maintenance of position	Unstable	Secure
7. Blocking	Occasionally by food, often by growth	Seldom by food, uncommonly by growth
8. Detection in body	Very radiopaque	Radiopacity satisfactory
9. Passage	Not readily passed through alimentary canal	Readily passed through alimentary canal
10. Price	Expensive	Inexpensive.

CONCLUSIONS

Many cases of neoplastic strictures, whose final assessment is not yet available, are discharged after the insertion of FPTs

and presumably remain alive and able to swallow. There appears to be no reason why the FPT should not allow satisfactory swallowing until the patient dies from extension, or other effects, of the growth. Some of the advantages enumerated in Table I are very striking. The most useful of these advantages appears to be the choice of length and size of the tube, the superiority of the flange in maintaining the position of the tube, and its ready availablity in any operating theatre.

In cases of carcinomatous stricture where surgery is contemplated, pre-operative positioning of a FPT may offer a decided advance in improving the patient's general condition pre-operatively—always so urgently necessary, and usually so inadequate by the intravenous route and not entirely satisfactory by gastrostomy or jejunostomy. Further work may also be considered regarding the use of a flanged portex or plastic tube as an applicator for direct radiation of the oesophageal growth.

SUMMARY

1. A simple method of making a flanged portex tube is described.

2. The insertion of this tube into benign and malignant strictures of the oesophagus for purposes of prolonged canalization is described.

3. The results obtained in a series of cases of caustic stricturing and neoplastic disease are discussed from representative case reports.

4. X-ray views of cases are shown before and after canalization.

5. The advantages of a Souttar's metal tube in the treatment of cases of carcinoma of the oesophagus are compared with the apparent advantages of the new flanged portex tube.

I should like to thank Mr. R. J. V. Milner, who originally suggested the idea of a plastic tube to me, and Dr. A. B. Bull, who showed me how portex tubing could be moulded. I should also like to thank Mr. D. J. Roux, Head of the Department of Otorhinolaryngology, for his constant advice and encouragement, Dr. J. I. Levy and members of the Radiology and Radiography staff for their willing cooperation, Mr. B. Todt for the photographs and the technicians of the Plastic Laboratory who made the introducers. Finally, I wish to thank Prof. J. H. Louw for his encouragement and access to his cases, and Dr. J. G. Burger, Superintendent, Groote Schuur Hospital, Observatory, Cape, for permission to publish.

A PROPOSED MECHANISM FOR THE SERUM CHOLESTEROL REGULATING EFFECT OF DIETARY FATS AND OILS*

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1. Preliminary results reported 2 years ago[1] showed that, under certain conditions, rats behaved similarly to humans regarding the serum cholesterol regulating effect of dietary coconut fat and sunflower seed oil. These studies have now been substantiated by numerous experiments and extended to other fats and oils. Thus in one experiment butter, tallow, peanut oil and pilchard oil, when fed as 20% of the diet, produced serum cholesterol levels in decending order of magnitude with butter as the highest and fish oil the lowest. These differences were sustained for 3 weeks with all oils. The butter and fish oil groups were kept on their diet for a further 7 months, without significant change in serum cholesterol concentration.

2. The chemically separated non-saponifiable fraction of sunflower seed oil, which had been reported earlier to have cholesterol-lowering properties, was further investigated. Different fractions obtained by the physical fractionation (liquid propane segregation process) of the whole oil were tested. It was found, that the heaviest fraction was the most, and the lightest the least potent. These fractions showed quantitative and qualitative differences in the composition of the unsaponifiable matter. The cholesterol-lowering action was unrelated to the fatty acid content and composition, since this was much the same in all of these fractions.

3. The various components of the unsaponifiable portion were next tested in amounts far in excess of those naturally occurring in sunflower seed oil. Fed as pure compounds dissolved in the coconut fat of the standard diet, β sitosterol had little effect, while squalene had a slight cholesterol-lowering effect. Combinations of these with β carotene and α tocopherol (vitamin E) produced a significant effect.

The conclusion was drawn that although substances which are present in the unsaponifiable fraction have been shown to have a certain serum cholesterol lowering effect, this could not be shown to be responsible for the action of the oil as a whole. Thus it appears possible that the effects of different oils can only be explained in terms of some property of the oil as a whole.

4. The effect on the serum cholesterol of rats of feeding cholesterol was next investigated. It was found that large doses of cholesterol fed with a virtually fat-free diet did not raise the serum-cholesterol levels. If it was fed dissolved in oil the serum cholesterol level became elevated. Dietary cholesterol apparently exerts little effect on the serum cholesterol levels in the absence of dietary fat.

5. The solubility of cholesterol in a variety of fats and oils at 37°C as determined *in vitro* was next compared with the serum cholesterol level produced when these oils were fed to rats. There was a good correlation. Thus the high serum cholesterol produced by coconut fat, for example, was reflected in a comparatively high solubility in this fat. The reverse was found in fish oil which had the lowest solvent capacity.

6. The hypothesis was advanced that the proporties of different fats to raise or lower the serum cholesterol levels may be due to their different capacities to dissolve cholesterol, both dietary or endogenous. The different cholesterol-raising properties of fats originally free from cholesterol, viz. coconut oil, may thus find an explanation through their ability to cause the intestinal re-absorption of biliary cholesterol.

7. On the above hypothesis there should be a certain amount of cholesterol, when fed with a given quantity of fat, above which no further rise in serum cholesterol is observed. This amount of cholesterol would correspond to the quantity necessary to saturate the fat with cholesterol. This appeared to be the case. In a direct experiment, increasing percentages of cholesterol in sunflower seed oil were fed to rats. Above 4 – 6% no further rise in serum cholesterol was observed.

8. Evidence was presented in support of the view that under certain conditions man can absorb dietary cholesterol, and the application of the solubility hypothesis to man was discussed.

* Abstract of paper presented at Research Forum, University of Cape Town, 3 November 1959.

I should like to thank Mr. H. de Wit for his conscientious laboratory work. To Dr. B. Bronte-Stewart and Prof. J. F. Brock, I am indebted for valuable suggestions and encouragement. The generous help of Messrs. Marine Oil Refiners of Africa (Pty.) Limited, is acknowledged.

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REFERENCE

1. Wilkens, J. A. (1958): S. Afr. Med. J., 32, 85.

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EDITORIAL : VAN DIE REDAKSIE

KEEPING UP WITH CHROMOSOMES

Knowledge of human chromosome abnormalities is at present growing in a logarithmic fashion. The earlier work on 'squash' preparations was recently summarized in this *Journal*.[1] Since then a symposium has been held on this subject at King's College Hospital, London, which has been discussed in *The Lancet*.[2]

Important earlier findings included, first, the definite demonstration that the human diploid chromosome number was 46. Three aberrations were described—in mongolism there was a single extra small autosome, making the chromosome number 47; in chromatin-positive Klinefelter's syndrome there were also 47 chromosomes, but here the additional member was an extra X sex chromosome; in chromatin-negative Turner's syndrome (gonadal dysgenesis) one sex chromosome has been lost, there being only one X and no Y, so that the total number is only 45.

In our Editorial[1] uncertainty was expressed regarding what the chromosome pattern in the syndrome of testicular feminization would turn out to be. This is an example of apparent 'sex reversal', or extreme male pseudo-hermaphroditism in which the patient appears to have external female characteristics, with good breast development and female external genitalia. She possesses no uterus, but has two intra-abdominal testes, which secrete oestrogen rather than androgen. Her nuclear pattern is male (i.e. chromatin-negative). This interesting condition is inherited as a sex-linked recessive characteristic (like haemophilia), or possibly a sex-limited autosomal dominant. Jacobs and her associates[3] have now reported the chromosome counts in four cases of this syndrome, and in all of them the normal number of 46, with normal sex chromosomes, were found. It is interesting to note that one of these patients was colour blind, and the similarly affected 'sister' of another was also colour blind. It would appear then, that this syndrome, unlike Turner's and Klinefelter's, is a true example of 'sex reversal'.

Similar normal-chromosome findings were reported at the symposium mentioned above in cases of anencephaly, epiloia, the Laurence-Moon-Biedl syndrome, neurofibromatosis, arachnodactyly, osteogenesis imperfecta, and achondroplasia.

Jacobs and her co-workers[4] have described a new anomaly which they term 'super female'. The patient had 47 chromosomes in the nuclei of cells cultured from skin and bone marrow, including three X chromosomes. Such a state had been previously described in drosophila, in which organism a primary non-disjunction of the X chromosome occurs with a frequency of about 1 in 2,000, so that ova-bearing XX, when fertilized by spermatozoa-carrying X, give rise to XXX 'super females'. Many of these do not live. In Jacobs' patient the only abnormality appeared to be moderate hypoplasia of the ovaries and genital organs, with oligomenorrhoea, poor breast development and an early menopause. It was remarkable that in both buccal mucosa and polymorph leucocytes occasional double sex-chromatin bodies were observed, and so it may be that such a finding on ordinary nuclear smears will act as a pointer to the discovery of further 'super females'. It is perhaps sad that this alluring term has been used to label a female who is really rather inferior as judged by the popular 'vital statistics' conception of the phrase in this 'Miss World' age.

Baikie *et al.*[5] described some remarkable findings in acute leukaemia. No chromosome abnormalities were found by them in chronic leukaemia or in myelomatosis. Four cases of acute leukaemia were abnormal. In one the chromosome number ranged from 46 to 50. In two others the number was constantly 46, but abnormal chromosomes were seen in a large proportion of cells, suggesting that a previous translocation had given rise to an aberrant cell line. In the fourth case, the bone-marrow cells had a model chromosome number of 48, as well as abnormalities of chromosomal form. After several months of treatment with steroids the modal chromosome number changed to 47, while terminally there appeared a race of cells in an irradiated area of bone with a modal number of 49. In a fifth case of acute leukaemia, no gross abnormalities were found.

Baikie *et al.*[5] consider the implications of their findings. They suggest three possibilities: First, the chromosome changes might arise simply as epiphenomena in a grossly disordered bone marrow. Secondly, the visible chromosomal changes may include the fundamental change which has rendered the cells neoplastic. Thirdly, the visible changes may be more or less remote consequences of subtle alterations in genetic constitution of the affected cells. Baikie and his associates prefer the latter possibility, by which acute leukaemia arises as a change in the genetic material in the cell—a change which can apparently be induced by radiation in certain people.

Finally Lejeune[2] has reported the case of a child who was dwarfed, with low intelligence and multiple malformations of spine and sella turcica. Only 45 chromosomes were present, one of the smaller chromosomes having apparently become attached by translocation to one of the medium sized ones.

Ford[2] summed up the present situation. Major anomalies of large chromosomes (including the X) are usually lethal, and so will not be expected to be found in clinical material. Most of the conditions so far described involve trisomy, that is, the addition of an extra chromosome to a pair. In Turner's syndrome we find the loss of one of the smallest and probably the least important chromosome, the Y. There may be many more examples of irregular lesions such as the translocation found by Lejeune, but it is likely that these are unique events—accidents of some sort leading to multiple congenital anomalies of a type which may not be reproducible. Clearly it would be advantageous if all cases of a typical multiple congenital abnormality could be examined for their chromosome material.

1. Editorial (1959): S. Afr. Med. J., 33, 743.
2. Editorial (1959): Lancet, 2, 448.
3. Jacobs, P. A. *et al.* (1959): *Ibid.*, 2, 591.
4. *Idem* (1959): *Ibid.*, 2, 423.
5. Baikie, A. G. *et al.* (1959): *Ibid.*, 2, 425.

ONDERSOEK NA STRALINGSGEVAAR

Dit is algemeen bekend dat röntgenstrale sowel as strale wat afkomstig is van radio-aktiewe materiaal soos radium, positiewe gebruike het, maar dat hulle ook gevare inhou.

Dit is nie ons doel om hier die positiewe en terapeutiese gebruike van bestraling van die aard waarna ons nou net verwys het, te bespreek nie. Dié gebruike is te goed bekend. Dat die gevare van bestraling egter nie altyd genoegsaam beklemtoon word nie, val nie te betwyfel nie. Trouens, hierdie gevare word glad te dikwels óf onderskat óf veronagsaam. Die toenemende gebruik (op die gebied van die handel en die geneeskunde) van ioniserende strale, wat die moontlikhede inhou om menslike weefsel te beskadig, stel byvoorbeeld groot getalle van die bevolking bloot aan 'n gevaarlike peil van bestraling wat selfs jare later tot onherstelbare skade kan lei.

Gebrekkige beenvorming is 'n voorbeeld van sulke skade wat deur bestraling kan ontstaan. Kromosoomveranderinge sou ook, om 'n verdere spesifieke voorbeeld te noem, kon ontstaan as gevolg van subtiele veranderinge van die genetiese samestelling van aangetaste selle. Baikie en sy medewerkers[1] reken byvoorbeeld dat leukemie op hierdie grondslag kan ontstaan, naamlik, as gevolg van veranderinge van die genetiese materiaal van selle—veranderinge wat skynbaar deur bestraling in die gevalle van sekere persone veroorsaak kan word.

Om hierdie hele saak grondig te ondersoek, is daar nou 'n kommissie van vyf deskundiges deur die Regering aangewys. Die opdrag van hierdie kommissie sluit in om ondersoek in te stel en verslag te doen oor: (1) Die gevaar vir die gesondheid van persone wat blootgestel word aan röntgen- of enige ander ioniserende strale wat nog nie deur wetgewing beheer word nie en die gebruike en misbruike van sodanige straling; (2) die hoeveelheid bestraling waaraan individue in verskillende hoedanighede blootgestel word; (3) die verwante gesondheids- en ander gevare waaraan pasiënte, personeel, en die breë publiek blootgestel word; (4) die onderskeie toelaatbare bestralingsdosisse; en (5) enige aanverwante aangeleentheid wat deur die kommissie nodig geag mag word.

Verder moet daar deur die kommissie aanbevelings gedoen word oor die vraag of die gebruik van alle soorte röntgenstrale aan statutêre beheer onderwerp moet word met inagneming van die bestaande wetgewing in verband met die beheer van radio-aktiewe isotope. Die kommissie moet hom ook uitspreek oor die soort wetgewing wat hy in die verband nodig ag. Ook moet aanbevelings gedoen word oor die moontlike opleiding van persone in die gebruik van röntgenstrale en oor navorsing wat op die gebied nodig geag mag word.

Die kommissie sal bestaan uit prof. S. F. Oosthuizen, President van die Suid-Afrikaanse Geneeskundige- en Tandheelkundige Raad, as voorsitter, tesame met die volgende lede: Prof. P. J. Kloppers, prof. E. M. Hamman, dr. M. Weinbren, en mnr. P. D. Hartzer.

Die aanstelling van hierdie kommissie is nodig sowel as tydig, en die resultate van hul ondersoek word met belangstelling afgewag.

1. Baikie, A. G. *et al.* (1959): Lancet, **2**, 425.

The Secretary of the Medical Association of South Africa, the Editor of the South African Medical Journal, *and the other members of the head office staff of the Association, extend hearty Christmas greetings to all members of the Association and all readers and supporters of the* Journal, *and wish them a happy and prosperous New Year*

Die Sekretaris van die Mediese Vereniging van Suid-Afrika, die Redakteur van die Suid-Afrikaanse Tydskrif vir Geneeskunde, *en die ander lede van die hoofkantoorpersoneel van die Vereniging, stuur hartlike Kersgroete aan alle lede van die Vereniging, en alle lesers en ondersteuners van die* Tydskrif, *en wens hulle 'n gelukkige en geseënde Nuwe Jaar toe.*

MOTORVERSEKERING

Die reëling wat die Mediese Vereniging van Suid-Afrika met die here Edward Lumley en Seuns (Edms.) Bpk. gedurende die laaste agt jaar gehad het, is deur die Maatskappy beëindig. Daar sal onthou word dat 'n verminderde premium beskikbaar was vir lede ten opsigte van polisse wat uitgegee is deur hierdie Maatskappy toe versekeringsgelde vir motors oor die algemeen gestyg het. Edward Lumley en Seuns het op grond van hulle ondervinding met eise gevind dat dit nie meer vir hulle moontlik is om met hierdie reëling voort te gaan nie. Na 1959 sal hulle dus nie meer polisse hernu nie.

Dit spyt ons dat hierdie toestand van sake ontwikkel het, aangesien ons verhouding met die Maatskappy altyd vriendelik en bevredigend was. Ons het hulle altyd behulpsaam gevind. Ons sal dit ook voel dat die kommissie wat aan ons deur die Mediese Versekeringsagentskap betaal is vir hierdie werk, verval.

Nadat hierdie saak baie deeglik oorweeg is, is dit besluit dat ons die belange van ons lede op die beste manier kan dien as ons hulle aanbeveel om hul motorversekering in die toekoms deur die Atlas Versekeringsmaatskappy te laat doen.

Ons lede is almal baie goed bekend met die Atlas by wie so baie van hulle verseker is ten opsigte van die Polisse vir Dokters se Professionele Aanspreeklikheid. Die Atlas is al gedurende die afgelope dertig jaar die amptelike versekeraars van die Vereniging en die verhouding tussen die Vereniging en hierdie Maatskappy is nog altyd uitstekend. Ons is seker daarvan dat diegene van ons lede wat die advies van die Vereniging se Versekeringsagentskap volg om hulle motorversekering deur die Atlas Maatskappy te laat doen, tevrede sal wees met die behandeling wat hulle sal kry. Die gelde vir premies sal op die normale tariewe gebaseer word, maar die diens wat gelewer sal word, sal in ooreenstemming wees met wat ons gewoond is om te verwag van so 'n organisasie soos die Atlas Versekeringsmaatskappy.

CARDIOSPASM IN AN AFRICAN: A CASE REPORT

JOSEPH KATZ, M.B., B.CH. (RAND), F.R.C.S. (EDIN.) and HELEN SENDER, M.B., B.CH., D.P.H. (RAND), D.M.R.D. (ENG.)

Cardiospasm does occur in the African. A report is presented of a case that was recently seen at the Non-European Hospital, Johannesburg.

A suitable definition of cardiospasm[1] is a 'condition in which without demonstrable obstructive pathological change, and usually without pain, food does not pass readily into the stomach from the oesophagus, but is held up in the oesophagus, which in the majority of cases undergoes dilatation, sometimes extreme'.

The term cardiospasm has been used for a long time for conditions of benign stenosis of the terminal portion of the oesophagus, in which peristaltic waves in the oesophageal musculature are deficient or absent. This was thought to represent a spasm at the cardia (therefore cardiospasm), but in 1930 Hurst and Rake[2] noted a degeneration of Auerbach's plexus in the oesophageal wall and stated that 'muscular contractions of the oesophagus were inadequate, often failing to reach the cardia', and offered the name 'achalasia'. Recently (1957) further studies on the physiology of deglutition[3] have shown that the dysphagia is due to a motor disturbance, manifested by incomplete propagation of primary peristaltic waves, with an inhibition of relaxation of the inferior oesophageal sphincter.

CASE REPORT

An African male, J.P., a kitchen servant aged 40, born in Pietersburg, was admitted on 12 May 1959, complaining of dysphagia since 1957. The dysphagia had been progressive and was treated at another hospital in 1958, where gastrostomy was performed. On admission he could only eat finely divided foods. After eating he vomited. He felt the food sticking at the level of the xiphisternum. He had lost much weight. His appetite was poor. He did not drink, and smoked 1-2 cigarettes daily.

On examination we found him very thin, underweight and malnourished (weight 94 lb.). He had a soft diffuse parotid and submandibular swelling on each side; also bilateral gynaecomastia (since puberty) and soft axillary gland swellings. Lungs and heart normal. Blood pressure 85/55 mm. Hg. Pulse rate 80 per minute. The abdomen indicated much loss of weight and showed 2 scars, viz. (*a*) from gastrostomy, and (*b*) a 2-inch vertical mid-line epigastric scar with some keloid formation. Liver, one finger enlarged. No other abdominal pathology found clinically. No oedema of limbs. The results of special examinations were as follows:

Wassermann reaction negative.

Haemoglobin 18·4 g.%. Leucocytes 16,200 per c.mm. (neutrophils 78%, lymphocytes 16·0%, monocytes 3·0%, eosinophils 3·0%).

Sedimentation rate 4 mm. per hour.

Serum acid phosphatase 1·9 units. Serum alkaline phosphatase 10·5 King-Armstrong units. Total serum protein 8·1 g.%.

Faeces dark brown, solid, occult blood present (orthotolidine reaction +++, amidopyrin reaction +).

Oesophagoscopy (J.K.) showed gross distension of the oesophagus. The mucosa was thickened and was the site of chronic oesophagitis with small areas of ulceration. The cardio-oesophageal orifice was easily visualized after aspiration of a large quantity of whitish fluid; it was dilated to size 37F oesophageal dilator, when the oesophagoscope passed easily into the stomach. A biopsy of the lower end of oesophagus was done.

Biopsy sections showed evidence of extensive ulceration with a small portion of stratified squamous epithelium remaining. There was well-marked inflammatory reaction with an infiltration of polymorphonuclear leucocytes. Structures which had the histological features of fungal hyphae and spores were observed. No evidence of malignant neoplasia was seen. A diagnosis of mycotic oesophagitis was made.

X-ray investigation (H.S.). A barium swallow showed the entire length of the oesophagus from the cardio-oesophageal junction upwards to be grossly dilated and sigmoid shaped. It contained a large quantity of fluid and undigested material. An initial hold-up took place at the cardio-oesophageal junction lasting up to approximately 30 minutes, when no barium entered the stomach. At 30 minutes a small quantity of barium was seen to trickle through the cardio-oesophageal junction, more marked during expiration (Fig. 1). The beak-shaped deformity of the cardio-oesophageal junction which is typical of cardiospasm was demonstrated in the serial radiograph. After the administration of amyl nitrate there was a dramatic release at the cardio-oesophageal junction (also characteristic of cardio-

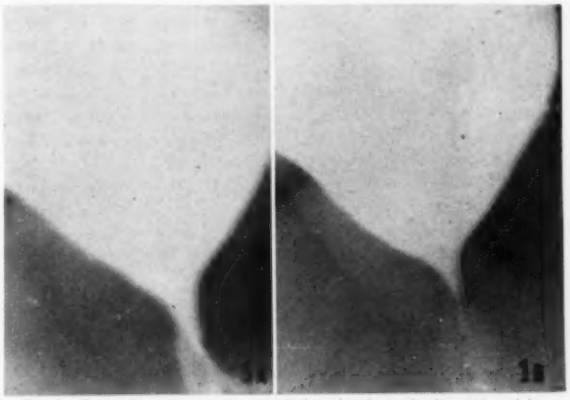

Fig. 1. Spot films of oesphago-gastric junction in expiration (A) and inspiration (B), showing improved emptying during expiration.

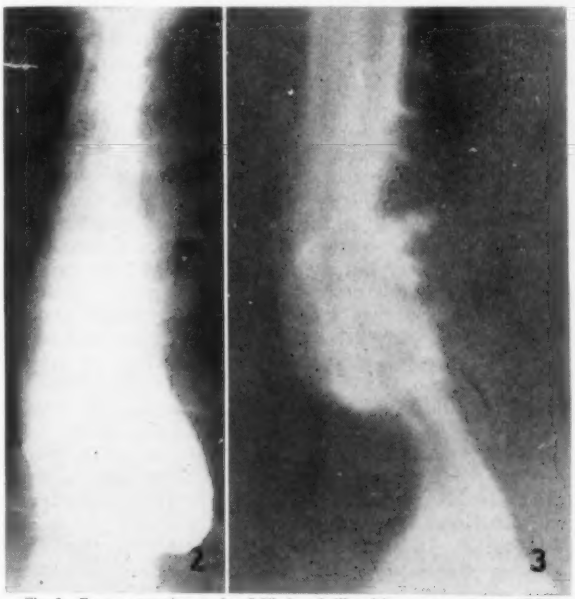

Fig. 2. Postero-anterior study of filled and dilated lower oesophagus 15-20 minutes after barium meal.

Fig. 3. Spot film of oesophago-gastric junction after amyl nitrate, showing satisfactory emptying.

spasm) and good emptying took place (Figs. 2 and 3). The normal mucosal pattern of the stomach was outlined.

On X-ray examination of the chest, the large oesophagus with remnants of barium still within it was seen through the heart border. There was no radiological evidence of the pulmonary parenchymal involvement that is frequently seen at the lung bases in cardiospasm.

DISCUSSION

The rarity of cardiospasm in the African may be gauged from the fact that this case is only the second diagnosed at the Non-European Hospital, Johannesburg, from 1949 to 1959, during which time 57,600 surgical and medical outpatients were seen. From large institutions for Africans such as Baragwanath and Coronation Hospitals, Johannesburg, only 7 cases were traced over a period of 5 years. Burrell,[4] who has done much work on lesions of the oesophagus in the Transkeian African, has not seen any case of cardiospasm in the last 3-4 years. We have been unable to find any other statistical information about the incidence of this condition in the African.

Little is known of the aetiology of cardiospasm. Gammie *et al.*[5] recently suggested causes such as toxic, infective, senile, and nutritional. Other authors, such as Etzel[6] working among Brazilians of poor economic status, suggested that lack of thiamine may play a role. Weiss[7] has suggested that there is a psychosomatic element, especially in the early stages of the malady. In our case there was certainly a high degree of malnutrition manifested by the patient's low weight and the presence of enlarged salivary glands and gynaecomastia. Whether his cardiospasm preceded or followed the malnourishment is a moot point.

Since it is universally accepted that cardiospasm is one form of disturbed oesophageal transport[8] a programme of investigation is recommended, comprising (1) careful history and examination, (2) barium swallow, (3) detection of occult blood in the stools, (4) oesophagoscopy, and (5) the mecholyl test (see below).

The sensation of obstruction may be referred to the lower, and occasionally to the upper, portion of the oesophagus. In the early stages it may be intermittent and warm foods are taken more easily than cold. Solids may be preferred to liquids. Regurgitation is common and may be brought about deliberately at a later stage. Bleeding from the oesophagus is rare in the early stages.

X-ray findings may show a dilated oesophagus with no mobility. In early cardiospasm a stage of compensation[9] may exist, in which frequent and inefficient, poorly coordinated oesophageal contractions force food into the stomach. In advanced lesions a decompensated stage is reached in which only gravity and changes in the intrathoracic pressure can overcome the resistance at the cardia.

Of particular diagnostic significance is the response of the achalasia to the injection of acetyl beta-methylcholine chloride (mecholyl).[10] The radiologist will see a pronounced contraction of the entire oesophagus and there is a prolonged increase in pressure. In normal patients and in patients with other conditions there is no such response. This sensitivity to mecholyl is explained by Cannon's law of autonomic denervation.[8] Conversely the cardiac end of the oesophagus tends to dilate on the administration of amyl nitrite (see above).

Differential Diagnosis

The chief problem is to differentiate cardiospasm from organic lesions such as carcinoma. The differentiation at the lower end of the oesophagus may be very difficult and, if biopsy is inconclusive, cytologic studies of smears and secretions may be of help. If doubt still exists an actual exploration of the cardia is indicated.

Large benign tumours may simulate the X-ray picture of cardiospasm, but careful endoscopy should clarify the situation.

Hiatal hernias and oesophagitis give a long history of heartburn and regurgitation of 'acid'. By the time a stricture has formed the oesophagus is usually shortened.

Scleroderma may first manifest itself as a cardiospasm-like picture, but Raynaud phenomena are almost always present if there are no skin manifestations.

Perhaps the condition most often confused with cardiospasm is the non-organic disorder of diffuse spasm (non-sphincteric spasm, pseudo-diverticulosis or segmental spasm of the oesophagus). This condition occurs in nervous, tense people of both sexes with a slight preponderance in women. Pain is a striking feature, occurring substernally with reflex spread to arms, jaws, ears and back. Dysphagia is very variable. Radiographically the condition involves the lower half of the oesophagus. Diffuse spasm is the physiological opposite of cardiospasm; it is manifested by simultaneous contractions at various levels in response to the swallowing reflex. The mecholyl test is useful in differentiation. Diffuse spasm may be associated with other lesions of the gastrointestinal tract, such as peptic ulcer, cholelithiasis and pancreatitis.

Treatment

Briefly, treatment may be divided into the non-surgical and the surgical. The non-surgical treatment is repeated dilatation; it is best done by forceful stretching with a well-placed cylindrical bag filled with water or air. In one series[9] 80% were permanently relieved by this method, in which there is a 2% risk of splitting the oesophagus. Antispasmodic drugs have little or no effect.

Surgical procedures of many types have been used, for example Wendel's cardioplasty and gastro-oesophagectomy. The best results, however, may be obtained by Heller's procedure with Zaaijer's modification,[11] which consists of an oesophagomyotomy, freeing the narrowed oesophageal segment from its muscular coat; in one series the satisfactory results amounted to 85%.[9]

SUMMARY

1. A case of cardiospasm in the African is presented.
2. The roentgenologic findings are illustrated.
3. The rarity of this condition in the African is stressed.
4. The aetiology, diagnosis and differential diagnosis are discussed.
5. The treatment is summarized.

We thank Dr. K. F. Mills, Superintendent of the Johannesburg General Hospital, for permission to publish, Mr. P. Keen, for referring the case to us and for his constant help and guidance, and Dr. J. Kaye, head of the Radiology Department, for his valuable advice. We are also indebted to Dr. Kaye's department and to Mr. Keen for the X-ray photographs.

REFERENCES

1. Aird, I. (1957): *A Companion in Surgical Studies*, pp. 508-511. London: Livingstone.
2. Hurst, A. F. and Rake, G. W. (1930): Quart. J. Med., **23**, 491.
3. Hightower, N. C. (1957): Amer. J. Surg., **93**, 2.
4. Burrell, R. J. W. (1959): Personal communication.
5. Gammie, W. F. P. *et al.* (1958): Lancet, **2**, 7053.
6. Etzel, E. (1942): Amer. J. Med. Sci., **203**, 87.
7. Weiss, E. (1958): Amer. J. Dig. Dis., **3**, 4.
8. Larber, S. H. and Shay, H. (1955): Gastroenterology, **28**, 5.
9. Olsen, A. M., Henry Ellis, F. and Creamer, B. (1957): Amer. J. Surg., **93**, 2.
10. Zaamer, P. and Ingelfinger, F. J. (1951): Gastroenterology, **19**, 242.
11. Kraijer, J. H. (1923): Ann. Surg., **77**, 615.

NEONATAL OEDEMA*

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In the first 4 weeks of life so-called 'physiological' oedema of the newborn occurs in 13% of premature infants and 1% of babies born at term[1]—in some series even more frequently. The term 'oedema neonatorum' has had different meanings for different observers, but is now usually reserved for 4 categories, viz. (*a*) sclerema, (*b*) subcutaneous fat necrosis, (*c*) neonatal cold injury, and (*d*) 'physiological' oedema. Besides these syndromes there are other oedemata unique to the neonate, as in the oedematous infant of the diabetic mother or the hydrops foetalis syndrome due to several causes, among them haemolytic disease and cytomegalic inclusion disease. With a few exceptions, such as kwashiorkor or lipoedema, any cause of oedema in the older child or adult can operate in the newborn, even as apparently unlikely a cause as acute or chronic nephritis.

The following case is presented because the aetiology of the oedema remains obscure.

CASE REPORT

A male African infant born normally on 28 June 1958 after a normal pregnancy. His mother was a healthy African primipara aged 24. She was delivered at home in Alexandra in the early evening under the care of her mother and grandmother. It was a vertex delivery. Immediately the baby was born he cried, but he was not properly inspected until next morning, because all lights in the house were extinguished on account of noises in the street attributed to 'tsotsis'. Next morning he was seen to have grossly swollen feet. He had not been exposed to cold. When he was 2 days old and had not improved the clinic doctor was called in. He found a lusty newborn infant whose legs and feet below the knees showed gross pitting oedema. He found no other abnormality, and asked me to see the baby when 8 days old.

On examination I found a mature, well-looking neonate with gross pitting oedema of legs and feet (Fig. 1). The femoral pulses were palpable, and the extremities felt normally warm. The child was vigorous, and the mucous membranes were well coloured. The Moro and sucking reflexes were present. There was no ascites. Liver and spleen were not palpable. No signs were found of cardiac enlargement, congestive failure, or abnormal heart sounds or rhythm. The air entry was good, and no adventitious respiratory sounds were heard. The genitals appeared normal; both testicles were in the scrotum. The urine proved normal on chemical and microscopic examination.

Pitting oedema of a localized area of the scalp was first noticed at 2 weeks old, and persisted (Fig. 2).

The baby always sucked well at the breast, and had daily stools. He appeared to thrive at the breast for 6 weeks, at which time the breast milk diminished and he received gradually increasing amounts of sweetened full-cream dried-milk mixtures. He was smiling socially and looked vigorous and well at 7 weeks of age, when he was 22 inches long and weighed 10 lb. 4 oz., with a head circumference of 15½ inches. His oedema of the lower legs and feet and the occipital region of the scalp has remained unchanged (to age 3 months—the time of writing). He has never been dyspnoeic nor shown any signs of distress.

Cardiac and renal causes for the oedema were excluded. X-ray of lungs and heart was normal, except for an enlarged thymus. There was no cardiac enlargement. Repeated examinations of the urine revealed no abnormality. Blood urea and electrolytes were normal. Serological tests for syphilis were negative, though penicillin therapy was given while awaiting results. X-ray of bones were normal. There has never been any hypoproteinaemia; paper electrophoresis shows a normal pattern. A normal blood-count without evidence of haemolysis, on several occasions, has ruled out erythroblastosis foetalis in this case.

* From a paper presented at the 3rd Congress of the South African Paediatric Association (M.A.S.A.), Pretoria, October 1958.

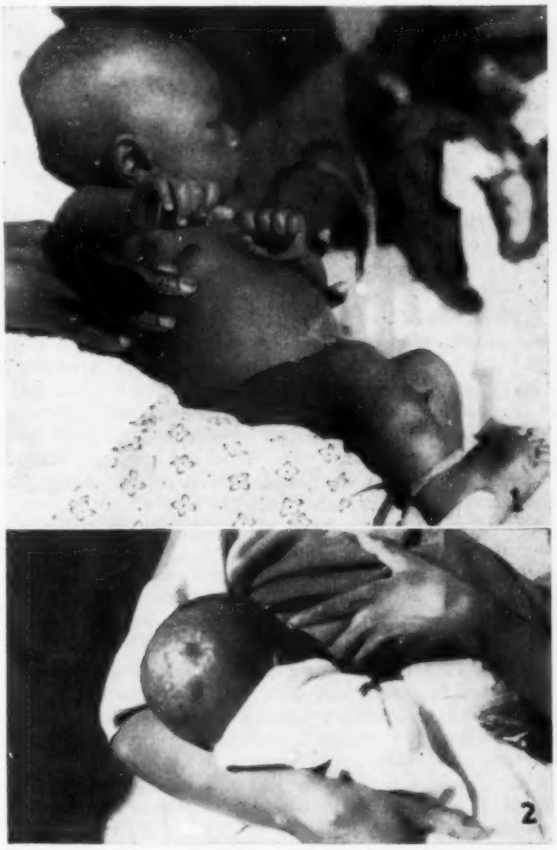


Fig. 1. Patient aged 1 month showing oedema of legs.
Fig. 2. Showing oedema of the scalp.

DIFFERENTIAL DIAGNOSIS

Physiological 'oedema noenatorum' is thought to be associated with physiological processes peculiar to the newborn. McCance[2] has been one of the foremost workers in this field, and he has shown how poorly the neonatal kidney performs in regard to urea and mineral clearances. The newborn human and newborn pig are very alike in this. Neither responds to extra salt in the diet with a corresponding rise in excretion. The extracellular fluid volume, which in any case is much larger in newborns relative to adults, expands with a rise in the concentration of sodium. This breakdown in homeostasis is well tolerated by the newborn, and in the piglet leads to a fall in the katabolism of protein.[3]

Failure to produce an adequately hypertonic urine is probably also concerned with decreased sensitivity of the tubules of the neonatal kidney to anti-diuretic hormone and decrease in production of this hormone.[4]

However, despite the apparently ineffective neonatal kidney in most newborns, the composition and volume of extracellular fluid *is* usually maintained at normal levels, and oedema does not result. This is because the food material absorbed is always being incorporated into the tissues in the process of growth and does not present itself for excretion by the kidney. The kidney of the newborn is therefore relieved of much of the work which it is called upon to do in adult life. Nevertheless, cow's milk presents to the baby's kidney a much greater osmolar load of electrolytes and nitrogen than breast milk,[5] which reminds one of the care necessary in choosing suitable feeds for the very young, and especially the premature.

Usually in 'physiological oedema' the baby is not ill and the oedema is transient, occurring at 2 or 3 days of age in the lower limbs, face and genitalia and clearing within a week.

The effects of cold in neonatal physiology has been studied in newborn pigs and also in puppies, which behave rather like newborn infants. They can tolerate a considerable fall of body temperature provided the return is made within a reasonable time.[3] However, long-continued exposure to cold gives rise to the syndrome of *neonatal cold injury*, so well described recently by Mann and Elliott.[6] The presenting features are increasing apathy, refusal of food, and oliguria, in an infant who does not look ill but is cold to the touch. He has pitting oedema, hypothermia, and striking erythema of the face, hands and feet. This illness is often complicated by purulent nasal discharge, and pulmonary haemorrhage has often been found after death. It is thought that Henoch's account of 'oedema of the newborn' in 1899 corresponds closely to this syndrome.

Local hardening of superficial tissues sometimes occurs over frankly oedematous parts, but this hardening, accompanied and preceded by oedema, differs from *sclerema*, where there is a diffuse hardening of subcutaneous tissue and the skin colour by contrast is yellowish-white. Underwood gave an accurate clinical description of this disease in 1811, but it has often subsequently been confused with the much milder *subcutaneous fat necrosis* of the newborn.

It is obvious that the patient described does not fit into any of the 'oedema neonatorum' syndromes. Tables I and II show causes of generalized oedema in the neonate, none of which are the probable reasons for the oedema in this patient. Although the distribution of oedema in this patient suggests a generalized form, in fact oedema has never been seen above the knee except in the region of the scalp, and there has never been sacral oedema or oedema of forehead and eyelids.

TABLE I. CAUSES OF GENERALIZED OEDEMA IN THE NEONATE

**'Oedema of newborn'*	All have been known as oedema neonatorum
Neonatal cold injury	
Sclerema	
Subcutaneous fat necrosis	
Infant of the diabetic	
Erythroblastosis foetalis, hydrops foetalis syndrome—due to several causes	
†(*Oedema of tetany of newborn*)	
Oedema of post-acidotic state and other mineral depletion	
Congenital syphilis	
Renal oedema	
Cardiac oedema	
Hypoproteinaemia	
Angioneurotic oedema	
Hormonal oedema iatrogenic—e.g. cortisone.	
†Beri-beri	

TABLE II. CAUSES OF HYPOPROTEINAEMIA IN THE NEONATE

Prematurity
Congenital syphilis
Loss of protein *via*—
  (*a*) Kidneys in nephrosis
  (*b*) Haemorrhage
Protein dilution in excess fluid administration
Heart failure
Congenital hypogammaglobulinaemia
Hypercatabolic hypoproteinaemia—transient dysproteinaemia group
Hypoalbuminaemia with aminoaciduria.

TABLE III. CAUSE OF LOCAL OEDEMA IN THE NEONATE

**Birth trauma*
Hormonal change in female neonate's external genitals
Localized exposure to cold
Lymphoedema secondary to congenital bands
Congenital lymphoedema
Bonnevie-Ulrich-Turner syndrome
Infantile cortical hyperostosis
‡Venous thrombosis

* Italics indicate conditions confined to the neonatal period.
† Described in literature concerning neonates, but doubtful entities.
‡ Theoretically possible, but does not appear to have been described.

Table III shows causes of localized oedema in the neonate. Of these conditions the only likely diagnosis in this patient is *congenital lymphoedema.*

The original report of congenital lymphoedema was published in 1892 by Milroy in America,[7] but in 1891, Nonne,[8] in Germany, had also reported a condition of heredofamilial oedema of the lower limbs. Meige[9] reported a further series in France in 1899. Since then various authors have reported the condition. Rosenberg,[10] in 1940, divided the cases into 2 groups, those in whom the condition was congenital and those in whom it appeared in early adult life. The majority of Milroy's cases had shown oedema at birth, while Meige's cases had their onset at puberty.

In 1940 Herzberg[11] described a case of 'idiopathic lymphoedema' or 'Milroy's disease' of the upper extremity. It has also become apparent that not all cases of lymphatic oedema have a family history. Milroy, however, described his disease as characterized by (1) its congenital and hereditary nature, (2) the limitation of the oedema to one or both lower extremities, (3) the permanence of the oedema, and (4) the complete absence of constitutional symptoms.

McKendry, Lindsay and Gerstein[12] report that from 1938 to 1955 at the Hospital for Sick Children, University of Toronto, Canada, 8 patients with congenital lymphoedema were admitted. They report a case with chylous ascites and lymphoedema in which, at autopsy, the subcutaneous tissues of the involved limbs showed many dilated lymphatic channels. The pathological picture was one of multiple dilated lymphatic channels with failure of peripheral channels to communicate with the large lymphatics. This patient, therefore, may be an example of one of the rare causes of neonatal oedema—a congenital defect of the lymphatics.

SUMMARY

A case of neonatal oedema in which the oedema has persisted beyond the first month, is presented.

The differential diagnosis is discussed.

Congenital lymphoedema is suggested as the most probable diagnosis.

ADDENDUM

The patient has recently been seen in the out-patients department of Baragwanath Hospital, Johannesburg, aged 16 months. He is apparently healthy, with no constitutional symptoms. The oedema is still present, more brawny in nature, with less pitting, but still limited to the same sites. This is in keeping with the suggested diagnosis.

I am indebted to the Superintendent of the Alexandra Health Centre and University Clinic for permission to publish, and to Dr. F. T. Schneier for referring the case to me.

REFERENCES

1. Hallum, J. L. (1941): M.D. Thesis, Univ. St. Andrews. Quoted in Young, W. F., Hallum, J. L. and McCance, R. A. (1941): Arch. Dis. Childh., **16**, 243.
2. Young, W. F. and McCance, R. A. (1942): *Ibid.*, **17**, 65.
3. McCance, R. A. and Widdowson, E. M. (1957): Lancet, **2**, 585.
4. Smith, C. A. (1951): *The Physiology of the Newborn Infant*, 2nd ed. Springfield, Ill.: Charles C. Thomas.
5. Committee on Nutrition (1957): Pediatrics, **19** (2), 339.
6. Mann, T. P. and Elliott, R. K. (1957): Lancet, **1**, 229.
7. Milroy, W. F. (1922): N.Y. Med. J., **56**, 505. Quoted in McKendry, *et al.*, *loc. cit.*[12]
8. Nonne, M. Quoted in McKendry *et al.*, *loc. cit.*[12]
9. Meige, H. (1898): Presse méd., **102**, 341. Quoted in McKendry *et al.*, *loc. cit.*[12]
10. Rosenberg, W. A. (1940): Arch. Derm. Syph., **42**, 1113. Quoted in McKendry *et. al.*, *loc. cit.*[12]
11. Herzberg, E. (1940): Proc. Roy. Soc. Med., **33**, 330.
12. McKendry, J. B., Lindsay, W. K. and Gerstein, M. C. (1957): Pediatrics, **19**, 21.

A CASE OF MULTIPLE MYELOMA PRESENTING CLINICALLY AS A SOLITARY TUMOUR OF THE SKULL

J. M. HOFFMAN, F.R.C.S. (EDIN.), *Surgeon* and H. VAN Z. DE KLERK, F.R.C.S. (EDIN.), D.OBSTET., R.C.O.G., *Surgical Registrar*
Livingstone Hospital, Port Elizabeth

This case of multiple myeloma (plasmacytoma) in a Bantu woman, presenting clinically as a solitary tumour of the skull, is interesting on clinical, pathological and radiological grounds.

Plasmacytoma occurs mainly in bone but occasionally in soft tissue, when it is confined to the submucosa of the air-passages and gastro-intestinal tract. Solitary plasmacytoma is rare, most 'solitary' cases proving to be multiple on follow-up.

The patient is a Bantu woman of 49 with a history of a gradually increasing swelling over the left parieto-occipital region for 6 months (Figs. 1 and 2). On examination a swelling is apparent over the left parieto-occipital area, 4 × 6 inches in size, irregularly lobulated and of the consistency of soft rubber mainly, but variable in parts. A plaque of bone is palpable in the centre, and defects in the skull margin at the edges.

X-ray Examination

A large bony defect is seen over the left parieto-occipital region (Figs. 3 and 4). There is fair definition of the edges, with scalloping. A plaque of the outer table has also lifted up. Generally small areas of sclerotic bone are surrounded by areas of diminished density.

X-rays of the vertebrae and pelvis show small osteolytic deposits.

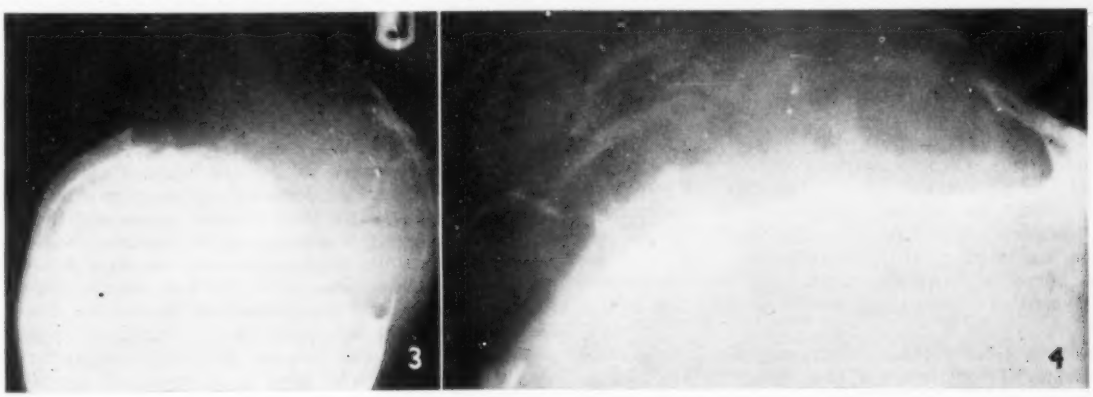
Cerebral arteriograms show no evidence of excessive vascularization or intracranial shift.

Other Examinations

Blood picture: Hb. 62%. White blood cells 17,400 per c.mm. (neutrophils 84%, monocytes 2%, lymphocytes 13%, eosinophils 1%). PCV 26%.
ESR 30 mm. Westergren.
Serum albumen 3·3 g.%, globulin 6·7 g.%, A/G 0·5 : 1.
W.R. negative.
Bence Jones protein negative (3 occasions).
Plasma electrophoresis—β globulin fraction increased.
Bone marrow—no abnormal cells detected.
Serum alkaline phosphatase 19 K.A. units. Serum calcium 8·8 mg.%. Serum phosphorus 1·9 mg.%.

Histology

On biopsy, the mass was found to be plasmacytoma, with clusters of plasma cells situated in a stroma of small round cells.



DISCUSSION

Disregarding the histology, a brief discussion on the differential diagnosis is not out of place. The differential diagnosis is that of large skull defects associated with large soft-tissue swellings, as follows:

Bone Tumours Proper

(*a*) Osteogenic sarcoma of the osteolytic type: Some new bone formation but mainly destruction. May also be radiating spicules and periosteal elevation. Not so much destruction as in this case.

(*b*) Solitary osteoblastoma—not described in the skull.

(*c*) Fibrosarcoma: Soft-tissue swelling with erosion of outer table.

(*d*) Reticulum-cell sarcoma—not in skull.

(*e*) Plasmacytoma: Nearly always multiple and osteolytic. Some bone sclerosis in between. We find no previous case of a single large skull deposit occurring so early in the disease. It is possible that deposits may coalesce if the patient survives long enough.

(*f*) Metastatic carcinoma: Irregular 'moth-eaten' osteolytic deposit related to a meningeal artery. Erode inner table more than outer.

Congenital—Cholesteatoma:

Arise in diploë. Erode inner table more than outer. Areas of lesser density with sclerotic margins leading to an appearance of scalloped margins. With very large lesions islands of bone (usually outer table) may remain intact and may be lifted out of position. This condition is very similar in its X-ray appearance, to the case reported here, especially in view of the scalloped edges and the elevation of plaques of outer table.

Endocrinopathies—Hyperparathyroidism:

Generalized osteoporosis and small cysts (areas of decalcification).

Deficiency—Osteomalacia and osteoporosis:

Generalized.

Rare Diseases

(*a*) Disorders of marrow constituents

(i) Lipoid granulomas and Hand-Sculler-Christian disease: X-ray appearance, large geographical skull defects with smooth edges and no reaction at edges. May be associated with exophthalmos, diabetes insipidus, and involvement of other membrane.

(ii) Eosinophilic granuloma: quite small clear-cut areas.

(iii) Letterer-Siwe disease (aleukaemic reticulosis): Special areas of bone loss. Occurs in infants.

(iv) Multiple myeloma—see above.

(*b*) Mesenchymal defects

Paget's disease and osteoporosis circumscripta: Much smaller lesions and with fluffy areas of mixed spongy bone and dense bone.

(*c*) Disorders of endochondral ossification

Fibrous dysplasia—may be monostotic or polystotic and associated with pigmentation and sexual precocity. Radiologically—diffuse osteolytic areas with fluffy cottonwool appearance of the tables.

Meningioma

Hyperostosis of diploë. Stippling if very vascular. May be irregular decalcification. If sarcomatous change occurs an appearance of lytic areas with scalloped margins may be seen. Besides plasmacytoma, only in this condition and in cholesteatomas is scalloping described.

SUMMARY

A case of multiple myeloma presenting clinically as a large solitary skull tumour is described. The differential diagnosis is discussed. The radiological picture is bizarre in that there is a large irregular osteolytic area with some osteosclerotic areas; complete erosion of the inner table and the lifting up of plaques of outer table; and scalloped edges. It will be noted that in only two skull conditions, viz. cholesteatoma and meningioma, are scalloped edges met with any frequency.

Acknowledgements to Dr. J. L. G. Ware, Medical Superintendent, Livingstone Hospital, for permission to publish; to Dr. W. C. Harington and Dr. F. A. O'Hagan Ward, SAIMR, for the histology; Dr. M. J. Welman for the biopsy; and Mr. K. Foden, Chief Radiographer, for X-rays and photographs.

REFERENCES

Aird, I. (1957): *Companion in Surgical Studies.* Edinburgh: Livingstone.
Brailsford, J. F. (1953): *Radiology of Bones and Joints.* London: Churchill.
Chorobski, J. and Davis, L. (1934): Surg. Gynec. Obstet., **58**, 2.
Colet, B. L. and Higgenbottom, N. (1953): *Atlas of Bone Tumours.* New York: Hoeber.
Colet, B. L. (1949): *Neoplasma of Bone.* New York: Hoeber.
Cushing, H. (1922): *Ibid.*, **34**, 557.
Epstein, B. and Davidoff, L. (1953): *Atlas of Skull Roentgenograms.* Philadelphia: Lea and Febiger.
Ewing, J. (1950): *Neoplastic Diseases.* Philadelphia: Saunders.
Geschickter, G. F. (1949): *Tumours of Bone.* London: Lippincott.
Hayes D. W., Bennett, W. A. and Heck, F. J. (1952): *Ibid.*, **53**, 262.
Nadeau, L. A., Magalim, S. I. and Stefanini, M. (1956): Arch. Path., **61**, 101

ARTHRITIS OF HIP COMPLICATING OSTEITIS PUBIS

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Osteitis pubis is a self-limiting disease that seldom spreads beyond the pubic bones. On rare occasions it may spread to involve the hip joint or the vertebral column; only few such cases have been reported and it is the purpose of this paper to publish yet another such case and to summarize what is known of the hip-joint lesion.

History

Osteitis pubis was first described in 1923 by Legueu and Rochet. Since the introduction by Millin of retropubic prostatectomy the incidence of osteitis pubis appears to have increased. Although osteitis pubis is a mild and self-limiting condition, metastatic spread may occur at a late stage. Survey of the recent literature has shown the following reported cases of arthritis of the hip following osteitis pubis:

Resulting from suprapubic prostatectomy Kretschmer and Ockuly[1] (1935) report 1 case, Silver[2] (1941) 2 cases, and Friedenburg[3] (1950) 1 case; and following retropubic prostatectomy Milson and Rose[4] (1957) report 1 case.

Vertebral osteomyelitis following prostatic surgery is likewise a rare complication, and was reviewed by De Feo[5] (1954).

Aetiology

Batson[6] demonstrated a pathway for the spread of infections of the vertebral column and hip joint. He injected thorium dioxide into the dorsal vein of the penis in cadavers and animals and noted that the usual course was through the prostatic plexus of veins, along the vessels of the lateral pelvic wall, into the common iliac vein on either side, and so into the inferior vena cava. With abdominal pressure, however, the material soon passed into the vertebral system, and finally entered the cranial cavity. Surgical interference with the prostatic bed and any pelvic infection create an excellent opportunity for infection to spread to the pelvis,

spine and hip joints. Close and multiple venous connections also link soft tissue, pubis, ischium and hip. The primary osteitis pubis has occurred after the following conditions:

1. Urinary-tract infections—pyelonephritis.
2. Retropubic prostatectomy and transurethral prostatic resections.
3. Abdomino-perineal resection for carcinoma of the rectum.
4. In women, normal delivery and symphysiotomy after a difficult labour.
5. In women, total cystectomy and cystopexy for stress incontinence.

The most generally accepted theory is that infection in the prevesical space involves the periosteum of the anterior pelvic girdle, leading to osteomyelitis. Further spread to the hip joint and vertebrae occurs *via* the pelvic veins.

Case Report

Mr. B., 50 years old, was admitted to the Johannesburg General Hospital on 14 October 1958 with irreducible prolapsed piles. A pyrexia of 100°F was present and the white blood count was 1,205 per c.mm. Despite intensive antibiotic therapy, including penicillin, streptomycin and sulphatriad the pyrexia persisted, and the w.b.c. count rose to 18,000 per c.mm. On the 4th hospital day a large mass presented, rising above the pubis, which was extremely tender. An operation was performed on the 7th hospital day and a large pelvic abscess was drained, the origin of which was not clear.

The subsequent progress was stormy with swinging temperature and no response to a wide range of antibiotics and cortisone. A large ischiorectal abscess developed as well as widespread inflammatory reaction in the region of the thigh extending to the knee. These required extensive drainage. The pyrexia and leucocytosis persisted.

On 19 December 1958 the patient first complained of tenderness over the symphysis pubis, and radiographs taken showed the osteitis pubis. At this time the general condition of the patient had improved and physiotherapy was ordered. In March 1959 limitation and pain on movement of the left hip was first complained of.

X-ray Appearances of Osteitis Pubis (Figs. 1-5)

The earliest changes are slight cortical erosions of the pubis adjacent to the symphysis pubis or inferior pubic rami. This is followed by irregular superficial destruction extending to involve the main portions of the inferior rami and ischia. Bilateral symmetrical generalized demineralization of the pubic bones and ischia may follow.

In the late stages separation at the symphysis pubis may take place, and dense deposits resembling sequestra are seen in both ischial tuberosities. Marked periosteal flaying and roughening of the ischial tuberosity may be seen. Eventually the involved bones become thicker and denser than usual, with obliteration of the symphysis produced by the fusion of the two pubic bones.

X-ray Appearances of the Hip-Joint Lesion (Figs. 1-5)

The appearance is essentially one of a septic arthritis, with steady, progressive erosive changes of the articular surface of the femoral head and the acetabulum. The joint space becomes narrower. Lytic lesions extend deeply until the acetabulum is enlarged and deformed. The femoral head may become eroded and flattened, and the neck thickened. All available information seems to identify the lesion as a pyogenic arthritis.

SUMMARY

1. In rare instances a destructive arthritis of the hip may follow urinary-tract operations or pelvic inflammation, being associated with osteitis pubis.

Fig. 1. Case Mr. B. 23 January 1959. Radiograph of pelvis showing normal radiological features.

Fig. 2. Case Mr. B. 26 February 1959. Narrowing of the joint space first noted at the left hip joint. Narrowing at the symphysis pubis now obvious with cortical erosions on either side of the symphysis pubis and along the inferior margins of the right and left ischial tuberosities.

Fig. 3. Case Mr. B. 13 March 1959. Further obliteration of the left hip-joint space, together with erosions into the left acetabulum.

Fig. 4. Case Mr. B. 21 March 1959. Commencing fusion at the symphysis. Some healing of lesions at the ischial tuberosity.

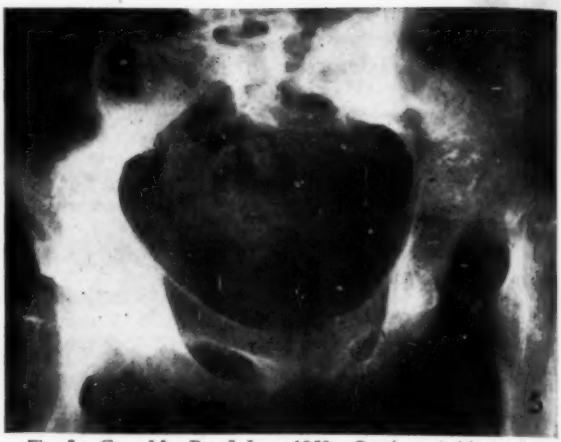

Fig. 5. Case Mr. B. 5 June 1959. Septic arthritis at the left hip joint with dislocation.

2. The usual aetiology is chronic infection of the urinary tract, activated by surgical trauma.

3. Spread of infection can best be explained by transfer through soft and bony venous pathways between the anterior inferior pelvis and the hip.

4. The condition appears to be a purulent arthritis, directly related to a low-grade osteomyelitis of the pubis and ischium, and resistant to cortisone and antibiotic therapy.

5. A case is described.

I wish to thank Dr. Josse Kaye, Chief Radiologist of the Johannesburg General Hospital, for permission to publish this case, and Prof. D. J. du Plessis under whose care the patient was admitted.

REFERENCES

1. Kretchmer, H. L. and Ockuly, F. A. (1935): J. Urol., **34**, 142.
2. Silver, C. M. (1941): Bull. Hosp. Jt. Dis. (N.Y.), **2**, 10.
3. Friedenburg, Z. B. (1950): J. Bone Jt. Surg., **32A**, 924.
4. Milson, H. B. C. and Rose, B. S. (1957): *Ibid.*, **39B**, 701.
5. De Feo, E. (1954): Radiology, **62**, 396.
6. (*a*) Batson, O. V. (1942): Amer. J. Roentgenol., **48**, 715.
6. (*b*) *Idem* (1940): Ann. Surg., **112**, 138.

UNIVERSITY NEWS : UNIVERSITEITSNUUS

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PASSING EVENTS : IN DIE VERBYGAAN

Society for Clinical and Experimental Hypnosis of South Africa (Southern Section). A general meeting of this Society was held at Groote Schuur Hospital, Observatory, Cape, on 12 November 1959. In his introductory remarks Dr. Maurice Herman, Chairman of the local branch, traced events which had led to the formation of Northern and Southern sections of the Society in South Africa, and expressed the hope that this would lead to the formation of a national body. He mentioned that the Society visualized courses of instruction in the subject of hypnosis given at postgraduate level, so that members would obtain a practical understanding and grounding above that gained from personal reading and individual groping. It was intended initially to hold study groups and clinical evenings. It was hoped that facilities would ultimately be granted for research and clinical work at various hospitals which would lead to higher standards of attainment. A draft constitution was then read and enthusiastically discussed and accepted after certain amendments had been made.

The clinical half of the evening comprised a discussion and demonstration of the phenomena of the trance state by Dr. Herman. Dr. S. Berkowicz demonstrated induction for dental analgesia and performed a dental extraction under hypnosis.

Membership of the above Society is open to all medical, dental and psychological personnel who are members of their respective Associations and registered with the South African Medical and Dental Council. Applications for membership may be directed to the Hon. Secretary, 7 Mimosa Arcade, Regent Road, Sea Point, Cape.

Gedenk-borsbeeld: Wyle dr. J. S. du Toit. Die Bestuur van die Volkshospitaal, Kaapstad, het besluit om 'n brons borsbeeld van wyle dr. J. S. du Toit te laat oprig by die Hospitaal ter herinnering aan die waardevolle dienste wat hy gelewer het ten opsigte van die medisyne en verplegingsdienste in die algemeen, en die Volkshospitaal in die besonder. Die kunstenaar aan wie die werk opgedra is, is mnr. I. Mitford-Barberton.

Die onkoste aan die onderneming verbonde sal gedek word deur die Bestuur van die Hospitaal, sowel as uit bydraes van belangstellendes en oud-studente van dr. du Toit. Verdere besonderhede kan verkry word van die Sekretaris, Volkshospitaal, Tuine, Kaapstad.

* * *

Memorial Bust: The late Dr. J. S. du Toit. The Management Committee of the Volks Hospital, Cape Town, has decided to erect a bronze bust of the late Dr. J. S. du Toit at the Hospital to commemorate the invaluable services he rendered to medicine and nursing in general, and to the Volks Hospital in particular. The artist, Mr. I. Mitford-Barberton, has been commissioned to do the work.

The Management Committee of the Hospital as well as friends and ex-students of Dr. du Toit will contribute to a fund to be used for the erection of the bust. Further information may be obtained from the Secretary, Volks Hospital, Gardens, Cape Town.

NEW PREPARATIONS AND APPLIANCES : NUWE PREPARATE EN TOESTELLE

A NEW LENS FOR X-RAY SCREEN PHOTOGRAPHY

The firm VEB Carl Zeiss Jena introduces a new lens f/0·85 for X-ray screen photography, and supply the following information:

X-ray screen photography has become a generally known and suitable method for X-ray serial examination of the entire population. Furthermore, screen photography is being used to an ever-increasing extent in medical X-ray diagnostic methods. The Zeiss Screen Image Camera in medium format was hitherto equipped with an R-Biotar F/1 f=120 mm. for size 63×63. This lens is of an excellent imaging performance. It should be noted that the relative aperture is not directly comparable to the generalized relative aperture of mirror (catoptric) systems. This would have to be F/0·7 to obtain the same density as the relative aperture F/1. Time of exposure for a patient of average size with a 6-valve X-ray apparatus and 70 kV 30 m As is 0·05 seconds. This ensures that any loss of definition due to movement is avoided. Good image performance and good distribution of definition over the image field are also largely due to the completely plane position of the film. The natural position of a film is plane or

cylindrical. With a double curvature of the film difficulties are bound to occur. Therefore, the film in Zeiss lenses is pressed against a plane field lens ensuring that the film is kept constantly in the same natural position.

From the medical side, a reduction in radiation intensity is demanded again and again. To meet this demand from the optical point of view, a new X-ray objective was designed with a relative aperture of F/0·85. This system with a focal length of 100 mm. is fitted into the X-ray screen camera. The image performance corresponds to that of the R-Biotar F/1 f=120 mm., with an aperture of 1, 4, the speed of the new objective being, of course, 2·7 times greater. Also in this lens, the film is pressed against a plane field lens to prevent loss of definition due to buckling of the film.

Special attention was paid to even light distribution over the entire image field. The reduction in intensity was considerably improved compared to the R-Biotar F/1 f=120 mm. and all other lens systems known in screen image photography. The new lens is thus the most powerful system for this purpose and at the same time enjoys the most favourable light distribution.

The new objective is used in the X-ray Screen Image Camera for serial examinations and in the X-ray Screen Cine Camera. For cine photography the high light intensity of the system is required for correspondingly high frame frequencies. The camera can take up to 20 frames per second.

Further applications of X-ray screen objectives are the photography of rapidly changing processes on the oscillograph or the projection of the oscillograph screen, for instance in lecture rooms.

Special mention should be made of the good high contrast reproduction of the anti-diffusing screen. The new lens represents a considerable advance in the reduction of the dose with a simultaneous improvement of the image and contrast performance.

The South African representatives of VEB Carl Zeiss Jena are Messrs. Optolabor (Pty.) Ltd., P.O. Box 1820, Johannesburg.

BOOK REVIEWS : BOEKBESPREKINGS

VASCULAR SPIDERS

Vascular Spiders and related Lesions of the Skin. By William Bennett Bean, M.D. Pp. xix + 372. 130 figures. 63s. net. Oxford: Blackwell Scientific Publications. 1958.

Professor Bean's essays will appeal especially to devotees of the works of Parkes Weber, but there are few who will not find entertainment as well as edification in this discursive work. Vascular spiders have long been one of the author's favourite studies and a third of the text is devoted to their nature and occurence in health, in pregnancy and in hepatic disorders. The rest of the book consist of observations on a great variety of vascular lesions of the skin, with disgressions on non-vascular diseases which may or may not be pertinent to the main subject. 'Much of it deals with observations independent rather than necessarily original', and herein lies its interest. The proof-reading has been poor and some titles to illustrations are transposed. There is a splendid list of nearly a thousand references, with its own index.

J.M.

SKIN DISEASES

The Nursing and Management of Skin Diseases. By D. S. Wilkinson, M.D., M.R.C.P. Pp. 288. 13 figures. 32s. 6d. London: Faber and Faber. 1958.

This is a book for the general practitioner and the nurse; its theme is that of handling patients in a practical way.

Although there is a certain amount of repetition, this is only noticeable on reading the book as a whole. When it is read as a reference book, the fact that certain statements have been repeated is of value to the practitioner.

The figures and plates are good, but as in all books on dermatology one wishes, for obvious reasons, that they were in colour.

A.H.T.

HERMAPHRODITISM

Hermaphroditism, Genital Anomalies and Related Endocrine Disorders. By Howard W. Jones, Jr., M.D. and William Wallace Scott, M.D., Ph.D. Pp. xvi + 456. 466 illustrations. 128s. London: Baillière, Tindall and Cox Ltd. 1958.

This work is really an up-to-date version of Hugh Young's famous monograph on hermaphroditism, which appeared in 1937. It includes detailed clinical findings, radiological techniques, corrective surgical procedures, and descriptions of embryonic sex differentiation, all profusely illustrated. The chapter on embryogenesis is contributed by Prof. A. Jost, of Paris, and is judiciously and clearly presented. The chapter on the 'Criteria of sex' is quite fundamental, but it is generally felt that 'intersex' is a better term than 'hermaphroditism' where there is 'a contradiction of one or more of the morphologic criteria of sex' (*sic*). 'Hermaphroditism' is an old and picturesque label which has always indicated intermediate external sexual characteristics, and in this sense is hardly applicable to Klinefelter's syndrome for example.

True hermaphroditism occupies a disproportionate amount of space, with so many individual cases described and illustrated by diagram (why diagrams only for true hermaphrodites?). The far commoner conditions of Klinefelter's and related syndromes, and of gonadal dysgenesis with female body-form are afforded less space than they merit. More cases, too, of the testicular feminization syndrome are needed to do justice to its variations. It is not clear why Cushing's syndrome is included at all, while neither simple hirsutism nor the syndromes associated with hyperthecosis ovarii appear.

The production is excellent and the text seems to be accurate. This book is a first-class work of reference for the endocrinologist, the gynaecologist and the urologist and for the plastic or general surgeon when he needs such a consultation.

W.P.U.J.

RADIOTHERAPY

Progress in Radiation Therapy. Edited by Franz Buschke, M.D. with 13 contributors. Pp. iii + 284. Illustrations. $9.75. New York and London: Grune & Stratton, Inc. 1958.

It is a pleasure to introduce this first volume of a new 'progress' series. The book is well edited, and the various chapters on the radiotherapeutic approach to cancer are provided by authoritative contributors.

In three chapters, with full bibliographies, the book emphasizes that, in radiation therapy, purely physical developments—megavoltage radiation sources, accurate dosimetry, isotopes—have today reached a stage where further substantial improvements are unlikely, and that the next important steps must come from studies relating to the biology of the disease itself, to host cell physiology, and to radiation biology.

Thus, there is an excellent review of the theoretical and practical aspects of relative biological efficiency (RBE) of external beams of ionizing radiations as a function of the quality or photon energy of the radiation. A chapter on the time-dose factor as it affects biological response to various given series of exposures summarizes much data from which optimal protraction and fractionation procedures can be computed, so as to achieve the greatest statistical probability of uncomplicated cure. A third section, devoted to methods whereby the radio-sensitivity of tissues and tumours may be selectively altered by chemical agents, raises the possibility of 'sensitizing' the tumour and 'protecting' normal tissues during irradiation. Means of reducing lethality from systemic irradiation by pharmacologic agents is also discussed.

There are further excellent chapters of an essentially practical and clinical nature on the radiotherapy of renal embryoma and thyroid, cerebral and breast neoplasms; and also on the cytohistologic evaluation of radiation response in carcinoma of the cervix. The reviewer regards this book as a most important and worth-while acquisition by workers and students in the field of cancer.

D.D.

OPHTHALMOLOGY

The Year Book of Ophthalmology 1958-59. Edited by Derrick Vail, B.A., M.D., D.Oph. (Oxon.), F.A.C.S., F.R.C.S. (Hon.). Pp. 407. 78 figures. $7.50. Chicago: Year Book Publishers, Inc. 1959.

Since the Year Book of the Eye, Ear, Nose, and Throat appeared in two sections, the volume devoted entirely to Ophthalmology has been increased in size and in range. In this new series, the high standard of previous issues is maintained. In a special introductory article, Bernard Becker brilliantly reviews recent advances in chronic simple glaucoma. The remainder of the book consists of abstracts of more important papers appearing in the world literature for the year ending September 1958. Each abstract has been carefully selected, is sufficiently long to contain enough detail for appreciation of the original, and is accompanied by critical comment from Derrick Vail, who often disagrees with the author but is always constructive and helpful. Once again, this Year Book can be recommended for those who wish to be reminded of the highlights of the year's literature and those who wish to keep abreast with the latest information on ophthalmology.

L.S.

STAPHYLOCOCCUS PYOGENES

Staphylococcus Pyogenes and its Relation to Disease. By Stephen D. Elek, M.D., D.Sc., Ph.D., D.P.H. Pp. vii+767. 44 figures. XXII tables. 84s. net + 3s. postage abroad. Edinburgh and London: E. & S. Livingstone Ltd. 1959.

The tremendous advances in knowledge and the great increase in our medical literature is well exemplified in this large volume which represents a monograph on a single organism, the staphylococcus. The biology of this pathogenic micro-organism, as the author remarks in his preface, is common ground to chemists, geneticists, veterinarians, physicians, pathologists and workers in the field of public health, as well as to others. All such investigators interested in this pathogen and in microbiology in general will welcome this excellent volume for its comprehensive chapters, and for its bibliography which comprises 187 pages of the book. Thus articles scattered throughout a wide range of journals are brought together here in appropriate context. The author also exposes gaps that are still present in our knowledge of this widely and intensively investigated organism; many aspects of staphylococci are still *sub judice*. Although there are certain omissions even in so large and well-documented a volume—for example in experimental details and methods and in certain clinical aspects of staphylococcal disease—this book will be a standard reference for many years to come.

N.S.

SELLA TURCICA

The Sella in Health and Disease. By Mahmoud El Sayed Mahmoud, Ph.D. Red., M.B., B.Ch., D.M.R.E. Supplement No. 8 to the *British Journal of Radiology*. Pp. xii + 100. 120 figures. 35s. London: The British Institute of Radiology. 1958.

This monograph is the outcome of a considerable amount of meticulous investigation, observation and enquiry by the author. He has studied the normal anatomy, histology and radiology of the sella turcica and the changes that occur in disease, especially intracranial tumour. He arrives at some interesting conclusions, among others for example: That the upper limit of the area of the sella profile is 130 sq. mm.; that there is a variable distance and angle between the sellar roof and the anterior end of the third ventricle; that a fully pneumatized sphenoid sinus protects the sellar floor from the effects of increased intracranial pressure; and that vascular disease within the skull produces no effects. The total result is a body of knowledge about the sella that will prove invaluable to all who are concerned with its radiological appearances, which are of very great importance for so often they provide the key to the diagnosis of intracranial lesions.

S.B.

ATLAS OF SURGERY

An Atlas of Surgery. By F. Wilson Harlow, M.B., B.S. (Durham), F.R.C.S. (Eng.). Pp. xiii + 363. 1,292 illustrations. 50s. net. London: William Heinemann Medical Books Ltd. 1958.

There is an abundance of surgical text-books available to the student, all relying primarily on the written word. This elegantly produced volume breaks new ground in that it has been compiled on the premise that the undergraduate student will be attracted and impressed by a series of visual pictures. These have been devised to illustrate clearly basic points of surgical importance—anatomical, pathological, clinical and operative—a knowledge of which is essential in the approach to the patient with a surgical complaint.

The atlas covers a wide range, being divided into separate sections entitled 'abdominal surgery', 'urology', 'gynaecology', 'general surgery', 'special surgery', 'orthopaedics', 'management of operations' and 'surgical pathology'. The text accompanying each picture or diagram is succinct and appropriately dogmatic, considering that it is designed to teach the medical student who is about to enter the surgical wards. It serves as a pleasant, painless introduction to the problems of surgery and will stimulate interest in those students who are by nature less enthusiastic. While it does not aspire to replace any of the more conventional text-books, it constitutes a valuable supplement to them.

A.J.W.

GERIATRICS

The Care of the Geriatric Patient. Edited by E. V. Cowdry, Ph.D., Sc.D. (Hon.). Pp. 438. South African price 68s. St. Louis: The C. V. Mosby Company. 1958.

This book, written by a team of 22 experts under the editorship of a renowned gerontologist, comprises articles on many aspects of geriatric medicine. True to expectation, the material is carefully sifted, reliable and instructive; cross references avoid irksome repetitions.

Just because the book as a whole is excellent, the few demerits and omissions figure prominently. The chapter on drug therapy, replete with sound advice, is nevertheless inadequate. If lack of space was responsible for the exclusions, the author's reminiscences could have been omitted. The section on the medical aspect of geriatrics is excellent, but devotes too much space to the problem of cancer. The exposition is flawless but the place is wrong. The apparent advice to treat surgically all fractures of the neck of the femur goes counter to experience. Many such fractures unite satisfactorily without open operation. Furthermore, pinning and prostheses are not quite innocent of morbidity and mortality.

An ever-increasing number of persons now demand a periodic check-up from doctors, who commonly lack a working plan for assessing, recording and utilizing their findings. On pages 74 *et seq.* an ideal plan is outlined. It is, however, too elaborate, and liable to overtax the time, patience and pocket of the examinee.

Excepting the few digressions, this lucid, compact and informative book is full of reward to the reader. It postulates that many senile degenerative changes are avoidable, that some are reversible, and that most are postponable; means to obtain these ends are suggested.

If T. S. Eliot had read it, his famous Gerontion would not have depicted old age as meek submission to fate. I.M.H.

HISTORY OF SEX CUSTOMS

A History of Sexual Customs. By Richard Lewinsohn, Dr. Med., Dr. Rerum Politicarum (Berlin). Translated by Alexander Mayce. Pp. xiv + 424. Illustrations. 31s. London—New York—Toronto: Longmans, Green and Co. 1958.

Transporting the reader from prehistoric times through the ancient civilizations to more modern times and finally to the present day, with Kinsey's revelations and artificial insemination, this book contains considerably more general history than its title would seem to suggest.

The general circumstances of the various historical periods and their effects on sex customs, and *vice versa*, make interesting reading. Wars, religions and other major sociological influences in the world's history have all left their mark and are admirably discussed by the author. Prominent people of the times, with their contributions, are well represented and add colour to the scene.

The numerous and varied illustrations are aptly chosen, while the reference and comprehensive index add further to the value of the book. There must be few (if any) books which deal so fully and authoritatively with this subject. J.P.v.N.

ON SPINAL ANAESTHESIA

Physiology of Spinal Anaesthesia. By N. M. Greene, B.S., M.A., M.D. Pp. xi + 195. Illustrations. $6.00. Baltimore: The Williams & Wilkins Company. 1958.

This monograph is a reflection of the transition of the specialty of anaesthesia during recent years from an art to science. Its nine chapters form a comprehensive appraisal of a very large volume of work in the fields of physiological and clinical research as it relates to spinal anaesthesia.

As may be expected, most of the book centres round the changes brought about by the effects of interference by spinal anaesthesia on the autonomic nervous system and through them on the circulation. The extensive subject matter is very well presented and apposite comments by the author emphasize those conclusions which are most valid and of greatest clinical importance without diverting the reader from the fuller more academic picture given.

The chapter dealing with obstetrical physiology is of particular interest and should do much to clarify the controversial position of spinal anaesthesia in obstetrical practice. A.B.B.

TEXT-BOOK OF PUBLIC HEALTH

A Synopsis of Hygiene (Jameson and Parkinson). 11th edition. By Llywelyn Roberts, M.D., M.R.C.P., D.P.H., assisted by Kathleen M. Shaw, M.B.E. Pp. viii + 694. 22 illustrations. 60s. net. London: J. & A. Churchill Ltd. 1958.

This new edition of Jameson and Parkinson's *A Synopsis of Hygiene*, edited by Llywelyn Roberts and Kathleen Shaw, although comprising less than 700 pages as compared to the 891 pages of the 10th edition, has nevertheless been so altered that the material now presented materially exceeds that of the old edition. Many of the chapters have been completely rewritten and their scope materially widened, so as to deal most informatively with such aspects as health education, mental health, accidents—both in the home and on the roads—rehabilitation, and atmospheric pollution, together with all their implications. It is disappointing to note that the epidemiological approach to ill health has been limited to the infectious diseases, and that the broader aspects of other forms of ill health have not been included.

The style is easy and the printing excellent and the layout of the book could not be bettered. The inclusion in the text of a list of references for further consultation can be wholeheartedly commended.

The work is a mine of information, and is as up to date as a text-book of this type could possibly be. While certain chapters—particularly that on public-health legislation—are only applicable to the United Kingdom, the remainder are fully topical for urban conditions in this country. I have no hesitation in recommending this treatise on public health to undergraduates, postgraduates, and all specialists in the public-health field. E.D.C.

PAEDIATRICS

Recent Advances in Paediatrics. 2nd edition. Edited by Douglas Gairdner, D.M., F.R.C.P. Pp. viii + 378. 82 illustrations. 48s. net. London: J. & A. Churchill Ltd. 1958.

In these days of super-specialization and increasing numbers of specialized scientific journals, a book such as this, summarizing recent advances in knowledge in succinct style, becomes very important. The specialist in the wide field of paediatrics and the general practitioner interested in the care and welfare of children need this book, not only for the information it gives, but also for the useful bibliographies at the end of each chapter.

This is the second edition (the first edition was published in 1954) edited by Douglas Gairdner, of Cambridge. There has been no attempt to follow up the articles in the first edition, except that on 'tuberculosis', which has been entirely rewritten. In this edition 3 experts from the USA—Falkner, McCrory and Fleischer—have joined a team of 12 British experts to produce a most interesting and informative book on theoretical as well as practical paediatric problems. Basic physiology is discussed in the articles on circulatory changes at birth, haematology of infancy, jaundice in the newborn, and physical growth. The subjects that are of great interest to the practising doctor are those on hypothyroidism, nephrosis, tuberculosis, rheumatic fever and osteitis. Of social and practical importance are the contributions on hydrocephalus and the use of the Spitz-Holter valve, and that on deafness in children.

It is a pity that this book is presented only once every 4 years. More frequent editions would bridge the gap between text-books and journals. B.E.

RADIUM ISODOSE CURVES

Radium-Isodosen. Die Radiumdosierung in „r". Von Dr. A. Verhagen. Mit einen Geleitwort von Prof. Dr. K. Nordmeyer (Deutscher und Englischer Text). viii + 96 Seiten. 34 Abbildungen. DM 19.50. Stuttgart: Georg Thieme Verlag. 1958.

This small work is really no more than what its name implies, for it consists essentially of about 70 pages of isodose curves, drawn on graph paper, around various radium containers and combinations of such containers loaded with varying amounts of radium. The text throughout is in German and English.

The foreword, by K. Nordmeyer, is best ignored. Here we read that 'it has long been the aim of the radiotherapist to use the uniform physical dosage in r for radium therapy', as though this aim has not long since been attained. The preface states the whole object of this work, namely that one should know the isodose curves around radium applicators and that one should state the dose in r units. It would have been better had the written text ended here. The 'introduction', of 10 pages, is largely devoted to a justification of why it was necessary to draw these isodose curves; but it also contains erroneous statements; e.g. 'In the past the dosage of radium radiation has not been measured in roentgen units'; and 'Below an isodose of 60 r/h no therapeutic effect can be expected'.

This brings one to the end of the written text. Then follows the isodose curves and dimensional drawings of applicators which will be of value only to those institutions which use these particular applicators. Only 10 references are listed and names such as Todd, Meredith, Paterson, Kottmeier and Heyman are conspicuous by their absence. J.A.B.

NUCLEAR SEX SYMPOSIUM

Symposium on Nuclear Sex. Edited for the Organizing Committee by the Secretary, D. Robertson Smith, M.A., M.D. and William M. Davidson, M.D. Pp. xvii + 188. 14 figures. 21s. net. London: William Heinemann Medical Books Ltd. 1958.

Notwithstanding the pioneer work of Hanking (1891), McClung and Wilson, Painter and others, and Young's classical book on genital abnormalities (1937), widespread interest in the subject of nuclear sex only really commenced in 1949 with the discovery by the Canadians Murray L. Barr and E. G. Bertram of a sexual dimorphism in the intermitotic nuclei of mammals. The practical applications of this and subsequent discoveries have produced a new scientific discipline or 'side-line' involving workers in many fields of medicine and biology, including anatomists, physiologists, geneticists, endocrinologists and cytologists. In order to bring all recently acquired knowledge into focus, a symposium was held in September 1957 at King's College Hospital Medical School, London—an admirable procedure, if for no other reason than that, at an early stage of this new game, initial misunderstandings and misconceptions were ironed out and nomenclature was agreed upon. The symposium was divided into 3 sections:

1. The genetic and cytological aspects of nuclear sex, by such speakers as C. E. Ford, B. M. Slizynski, Harold Klinger, J. L. Hamerton, Leo Sachs, and Mathilde Danon.
2. The application to the study of intersex and related states, with contributions by Peter Bishop, D. J. B. Ashley, R. E. Siebenmann, W. M. Davidson and others.
3. The application of nuclear sex to the study of tumours.

The papers and discussions in this publication are a fascinating story of the evolution of a 'new' scientific endeavour. The reviewer is deeply impressed with the way in which scientists with originally widely separate interests have adopted and pooled their meticulous techniques to produce the mosaic pattern of knowledge included under the simple title 'Nuclear Sex'. Every paper published is a positive contribution to our knowledge, and this small, well-edited book will be of great value to all who have any interest whatsoever in X and Y. R.S.